UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2004/00383 (LAA)
2004/00659 (NLAA)

July 27, 2004

Ms. Christina M. Welch
Bureau of Land Management
Prineville District Office
3050 NE 3rd Street
Prineville, Oregon 97754

Re: Endangered Species Act Section 7 Informal and Formal Consultation and Magnuson-Stevens Fishery Conservation Management Act Essential Fish Habitat Consultation on the Effects of the Bureau of Land Management Upper John Day River Basin Grazing Program from 2004 to 2008, in the North Fork, Middle Fork and Upper John Day River Subbasins, Oregon

Dear Ms. Welch:

Enclosed is a document prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) on the effects of Bureau of Land Management Upper John Day River basin grazing program for calendar years 2004 through 2008. The document contains both concurrence on activities which "may affect, but are not likely to adversely affect" (NLAA) Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*) (NOAA Fisheries Tracking No.: 2004/00659), and a biological opinion (Opinion) for those activities which are "likely to adversely affect" (LAA) MCR steelhead (NOAA Fisheries Tracking No.: 2004/00383). NOAA Fisheries concludes in this Opinion that the proposed LAA actions are not likely to jeopardize the continued existence of MCR steelhead. As required by section 7 of the ESA, NOAA Fisheries also includes reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are reasonable and appropriate to minimize the impact of incidental take associated with these actions.

This document also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations at 50 CFR Part 600. The North Fork, Middle Fork and Upper John Day River subbasins have been designated as EFH for Chinook salmon (*Oncorhynchus tshawytscha*). NOAA Fisheries concludes that the proposed action may adversely affect designated EFH for Chinook salmon. As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must

provide a detailed response in writing within 30 days of receiving an EFH conservation recommendation.

If you have any questions regarding this consultation please contact Brett Farman of my staff in the Oregon State Habitat Office, at 541.975.1835 ext 228.

Sincerely,

D. Robert Lohn
Regional Administrator

cc: Marisa Meyer, USFWS
Larry Bright, MNF
John Morris, BLM
Tim Unterwegner, ODFW

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Bureau of Land Management Upper John Day River Basin Grazing Program
from 2004 to 2008,
in the North Fork, Middle Fork, and Upper John Day River Subbasin, Oregon

Agency:	Bureau of Land Management
Consultation Conducted By:	NOAA's National Marine Fisheries Service, Northwest Region
Date Issued:	July 27, 2004
Issued by:	Russell M Strach for _____ D. Robert Lohn Regional Administrator
NOAA Fisheries No.:	**2004/00383 (LAA)** **2004/00659 (NLAA)**

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1. INTRODUCTION

1.1 Consultation History

On, April 7, 2004, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a letter from the Prineville District Bureau of Land Management (BLM) requesting consultation on the effects of the proposed Central Oregon Resource Area (CORA) livestock grazing program for BLM-administered allotments in the North Fork John Day River (NFJDR), Upper John Day River (UJDR), and Middle Fork John Day River (MFJDR) subbasins on Middle Columbia River (MCR) steelhead (*Oncorhynchus mykiss*). The accompanying biological assessment (BA) described proposed livestock grazing actions as well as the environmental baseline, and potential effects of those actions on MCR steelhead within BLM-administered allotments in the NFJDR, UJDR and MFJDR subbasins.

Before 2004, the BLM consulted on grazing in the UJDR and Lower John Day subbasins collectively. For this consultation, the BLM consulted in the UJDR subbasin separately from the Lower John Day subbasin, based on the districts that administer this land.

A letter of concurrence was issued on June 28, 2000, for those allotments which may affect, but are "not likely to adversely affect" (NLAA) MCR steelhead (NOAA Fisheries No.: 2000/00721). A biological opinion was completed on January 17, 2001, for calendar years 2000 and 2001 for allotments which may affect, and are "likely to adversely affect" (LAA) MCR steelhead (NOAA Fisheries No.: 2000/00944). On October 21, 2002, NOAA Fisheries issued a biological opinion to the BLM for the 2002 and 2003 grazing seasons for the allotments determined to be LAA MCR steelhead by the BLM (NOAA Fisheries No.: 2002/00200)

Early discussions of the project followed the guidance in the Streamlining Consultation Process (USDA, USDI, USDOC 1999). In these discussions, NOAA Fisheries and BLM staff discussed the consultation for the CORA grazing program for the NFJDR, UJDR, and MFJDR, and agreed to consult on both LAA and NLAA allotments. A letter requesting concurrence for those allotments proposed as NLAA MCR steelhead was received from the BLM on June 9, 2004. NOAA Fisheries and BLM staff agreed to consult on the grazing program for the 2004 through 2008 grazing seasons. Therefore, this consultation covers the BLM CORA grazing program for the NFJDR, UJDR, and MFJDR for the 2004 through 2008 grazing seasons.

The MCR steelhead was listed as threatened under the Endangered Species Act (ESA) by NOAA Fisheries on March 25, 1999 (64 FR 14517). NOAA Fisheries applied protective regulations to MCR steelhead under section 4(d) of the ESA on July 10, 2000 (65 FR 42422).

The objective of this biological opinion (Opinion) is to determine whether the proposed actions are likely to jeopardize the continued existence of MCR steelhead. The objective of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) essential fish habitat (EFH) portion of the document is to determine if the proposed action may adversely affect EFH

for Chinook salmon and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects on EFH resulting from the proposed action.

1.2 Proposed Action

The BAs submitted to NOAA Fisheries on April 7, 2004, and June 9, 2004, describe proposed livestock grazing activities for 2004 through 2008 on 60 allotments in the NFJDR, MFJDR, and UJDR subbasins. The BA included proposed use dates, livestock numbers, and locations of each allotment (Table 1).

In the BA, the BLM determined that 44 of the 60 livestock grazing allotments for the CORA grazing program are NLAA MCR steelhead. The remaining 16 allotments included in this consultation were determined to be LAA MCR steelhead. The BLM's rationale for these determinations is included in Table 1 below. Utilization standards for all pastures containing streams where MCR steelhead spawn will be 6 inches of residual stubble height along the first line of perennial vegetation along a stream (greenline), less than 10% bank damage (where appropriate), and less than 10% woody browse utilization. The standard for other allotments containing riparian areas will be the same, but will have 4 inches of residual stubble height along the greenline rather than 6 inches.

Table 1. Allotment information for BLM's 2004 to 2008 grazing seasons

Allotment	Miles of MCR steelhead habitat[1]	Proposed Use Dates[2]	Proposed Animal Use Months (AUM)[3]	Allotment Acreage (public/ private)	BLM's Determination of Effect on MCR Steelhead	Rationale for Effects Determination
Squaw Creek	2.1	April 1 to November 30	301	320/ 1,000	LAA	lack of fence maintenance, pasture move, and non-use violations
Johnson Creek	1.6	April 1 to November 15	436	7,698/ 11,140	LAA	early season use and potential for redds
Dixie	4.6	June 1 to October 31	319	2,548/ 13,150	LAA	early season use and potential for redds
Murderer's Creek	5.9	April 20 to September 20	860	16,004/ 18,239	LAA	early season use and potential for redds
North Fork	5.75	May 1 to May 31	316	1,894/ 5,505	LAA	early season use and potential for redds
Franks Creek	0.9	April 1 to November 30	223	2,617/ 1,255	LAA	early season use and potential for redds

Allotment	Miles of MCR steelhead habitat[1]	Proposed Use Dates[2]	Proposed Animal Use Months (AUM)[3]	Allotment Acreage (public/ private)	BLM's Determination of Effect on MCR Steelhead	Rationale for Effects Determination
Johnny Cake Mountain	1.2	April 1 to November 30	30	280/ 1,000	LAA	early season use and potential for redds
Big Baldy	4.4	April 15 to May 31	600	12,726/ 3,346	LAA	early season use and potential for redds
Pointer	0.6	May 1 to June 15	12	85/ 190	LAA	early season use and potential for redds
Cottonwood Creek	0.8	April 15 to November 15	204	6,492/ 4,698	LAA	early season use and potential for redds, poor compliance record
Rockpile	7.6	March 4 to May 10	928	4,918/ 4,899	LAA	early season use and potential for redds
Little Wall Creek	0.7	April 1 to May 31	53	320/ 1,000	LAA	early season use and potential for redds
Canyon Mountain	0.4	May 1 to June 15	5	50/ 15	LAA	early season use and potential for redds
Two County	3.1	April 1 to November 30	1,105	13,796/ 12,750	LAA	early season use and potential for redds
Kinzua	2.7	May 1 to October 31	1,170	9,493/ 33,018	LAA	early season use and potential for redds
Creek	0.7	April 5 to April 22 and October 25 to November 15	63	706/ 400	LAA	early season use and potential for redds
Clinton O. Haris	0	May 1 to July 15	64	934/ 36,566	NLAA	fish passage barrier discovered downstream
Lillian C. Mascall	0.2	July 15 to October 30	265	4,308/ 5,320	NLAA	use occurs after MCR steelhead spawning/incubation
Rattlesnake Creek	0	May 15 to October 30	11	280/ 3,900	NLAA	fish passage barrier downstream
Smith Hollow	0	May 1 to October 15	51	800/ 8,080	NLAA	no streams

Allotment	Miles of MCR steelhead habitat[1]	Proposed Use Dates[2]	Proposed Animal Use Months (AUM)[3]	Allotment Acreage (public/ private)	BLM's Determination of Effect on MCR Steelhead	Rationale for Effects Determination
Johnny Creek	0.4	April 1 to November 30	196	1,040/ 2,100	NLAA	fence & road exclude livestock from stream
Slickear Mountain	3.8	April 1 to November 30	537	3,274/ 45,926	NLAA	fencing excludes cattle from streams & limited fish habitat available for MCR steelhead
Windy Point	0	April 1 to November 30	407	2,514/ 3,650	NLAA	no fish habitat
Birch Creek	1.0	April 1 to November 1	368	3,089/ 5,080	NLAA	steep gradient provides poor fish habitat
River	0.6	October 1 to November 30	13	135/ 340	NLAA	use occurs after MCR steelhead spawning/incubation
Middle Fork	0.4	April 1 to May 31	77	120/ 3,600	NLAA	high flows deter cattle wading and provide poor spawning habitat for MCR steelhead
Neal Butte	2.0	April 1 to October 30	119	712/ 2,800	NLAA	area only provides migratory habitat for MCR steelhead
Rim	1.0	April 1 to November 30	41	654/ 100	NLAA	area only provides migratory habitat for MCR steelhead & fencing excludes cattle access to streams
Dayville	0	June 1 to July 13	141	1,640/ 2,122	NLAA	lack of flow and passage due to irrigation
Battle Creek	0	April 1 to November 30	830	4,958/ 1,928	NLAA	poor fish habitat, no fish observed
Jinks Creek	0	April 1 to November 30	16	80/ 5,876	NLAA	no fish present

Allotment	Miles of MCR steelhead habitat[1]	Proposed Use Dates[2]	Proposed Animal Use Months (AUM)[3]	Allotment Acreage (public/ private)	BLM's Determination of Effect on MCR Steelhead	Rationale for Effects Determination
Cold Springs	0	April 1 to November 1	35	280/ 2,800	NLAA	steep gradient provides poor fish habitat & limited stream access for cattle
Scott Creek	0	April 1 to November 30	119	947/ 2,840	NLAA	upland pasture
East Franks Creek	0	April 1 to November 30	81	644/ 1,000	NLAA	upstream of natural fish passage barrier
Kidd Creek	0	April 1 to November 1	91	723/ 6,083	NLAA	upstream of natural fish passage barrier
Sheep Creek	0	April 1 to November 30	153	775/ 16,716	NLAA	upstream of natural fish passage barrier
Sheep Gulch	0	April 15 to July 15	250	2,999/ 2,200	NLAA	no fish present
McCarthy Creek	0	April 1 to July 31	105	867/ 162	NLAA	steep gradient provides poor fish habitat
Gibson Hill	0	April 1 to November 30	8	40/ 2,300	NLAA	poor fish habitat in ephemeral drainage
19 20	0.6	April 1 to May 31	26	160/ 660	NLAA	fencing & road barrier exclude cattle from stream
Rudio Mountain	0	July 1 to October 15	590	3,860/ 1,600	NLAA	steep gradient provides poor fish habitat & limited access from cattle
Blue Basin	0.5	April 1 to November 30	220	1,000/ 1,300	NLAA	fencing excludes cattle from stream & no fish habitat
Fields Creek	0	April 1 to November 30	214	1,092/ 3,350	NLAA	no fish habitat
Indian Creek	0	May 1 to June 15	5	40/ 2,000	NLAA	no fish present
South Fork	0	April 1 to November 30	47	240/ 4,675	NLAA	above natural fish passage barrier

Allotment	Miles of MCR steelhead habitat[1]	Proposed Use Dates[2]	Proposed Animal Use Months (AUM)[3]	Allotment Acreage (public/ private)	BLM's Determination of Effect on MCR Steelhead	Rationale for Effects Determination
Izee	0	April 1 to November 30	40	200/ 1,320	NLAA	above natural fish passage barrier
Canyon Terrace	0	April 1 to November 30	20	158/ 40	NLAA	no fish present
Big Canyon Creek	0	May 1 to November 30	20	148/ 1,675	NLAA	no fish habitat
Black Canyon	0	April 1 to November 30	188	944/ 2,880	NLAA	steep gradient provides poor fish habitat
Ferris Creek	0	April 15 to September 15	280	3,177/ 1,960	NLAA	low or no fish present
Big Bend	0.5	April 1 to May 31	25	320/ 380	NLAA	fencing excludes cattle access to streams
Smokey Creek	0.2	April 1 to June 15	307	2,213/ 2,000	NLAA	limited MCR steelhead spawning habitat available
Umatilla	0.9	April 1 to November 30	113	679/ 1,970	NLAA	no MCR steelhead spawning habitat available
Day Creek	0	April 1 to October 30	160	1,583/ 1,300	NLAA	limited MCR steelhead habitat available
Gibson Creek	0.25	April 1 to November 30	7	40/ 1,560	NLAA	no MCR steelhead spawning habitat
Morgan Creek	0	April 1 to November 30	370	1,447/ 2,760	NLAA	above natural fish passage barrier
Blackhorse Draw	0	April 1 to November 30	32	120/ 4,040	NLAA	upland pasture
Rudio Creek	1.4	April 1 to November 30	52	1,848/ 6,120	NLAA	limited access for cattle to streams
Pass Creek	0	April 1 to November 30	10	80/ 3,750	NLAA	upland pasture
Big Flats	0	April 15 to November 30	100	825/ 8,113	NLAA	above natural fish passage barrier

Allotment	Miles of MCR steelhead habitat[1]	Proposed Use Dates[2]	Proposed Animal Use Months (AUM)[3]	Allotment Acreage (public/ private)	BLM's Determination of Effect on MCR Steelhead	Rationale for Effects Determination
[1] Miles of MCR steelhead habitat identified by BLM [2] Dates indicate maximum time allowed by permit and may be less in any year [3] AUMs indicate maximum units allowed by permit and may be less in any year						

NOAA Fisheries concurs with the BLM's determinations that livestock grazing for the 2004 to 2008 grazng seasons on these allotments are NLAA MCR steelhead. NOAA Fisheries' concurrence is based on the following: (1) Timing of grazing rotations ensures that cattle are excluded from streams until July 15 in those pastures containing or beside streams where MCR steelhead may spawn; (2) current grazing management strategies and monitoring requirements implemented by the BLM minimize impacts of livestock grazing on riparian vegetation and streambank stability; (3) other habitat indicators not directly affected by grazing, such as road density, will be maintained by the proposed grazing system; and (4) MCR steelhead habitat indicators and elements such as bank stability, sediment, and width to depth ratios are improving under the current grazing practices. NOAA Fisheries believes there is a negligible likelihood of adverse effects or incidental take of MCR steelhead on the allotments determined NLAA MCR steelhead by the BLM. This document serves as NOAA Fisheries' concurrence on the allotments determined by the BLM to be NLAA for MCR steelhead. These NLAA allotments are not analyzed further in this document.

The BLM must reinitiate consultation on any of the 44 NLAA allotments if: (1) New information reveals that effects of the action may affect listed species in a way not previously considered; (2) the action is modified in a way that causes an effect on listed species that was not previously considered; or (3) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16). This concurrence expires at the end of calendar year 2008.

The remaining 16 allotments addressed in detail in this Opinion were determined by the BLM to be LAA MCR steelhead. The 16 allotments (Squaw Creek, Johnson Creek, Dixie, Murderer's Creek, North Fork, Franks Creek, Johnny Cake Mountain, Big Baldy, Pointer, Cottonwood Creek, Rockpile, Little Wall Creek, Canyon Mountain, Two County, Kinzua, and Creek) will be analyzed in detail in this Opinion.

1.3 LAA Allotment Proposed Action Descriptions

1.3.1 Squaw Creek Allotment

Proposed Action

The proposed action for the Squaw Creek Allotment is grazing 301 AUMs from April 1 to November 30. Allowable residual stubble height utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. Squaw, Buckhorn, and Frank Creeks flow through this allotment.

In 1980, instream aquatic habitat in Squaw Creek (1.0 mile on 2 segments) was rated good to fair. Squaw Creek supports spawning and rearing habitat for MCR steelhead. Spawning gravel, good canopy cover, and good bank stability contribute to this rating. Canopy cover and bank stability decrease as the stream leaves the canyon area and the valley becomes more open, with better access for grazing. Some downcutting of the stream channel is apparent in open valley segments.

Buckhorn Creek (1.1 miles on 3 segments) has suitable rearing habitat for MCR steelhead with good, large structural material, escape cover, pool habitat, instream wood, and small structural material. Generally, canopy cover over the stream increased between surveys done in 1980 and 1990, but erosion is a problem along the road.

Frank Creek was rated poor for fish habitat. It is limited by low flows, poor pool conditions, siltation, and lack of escape cover and spawning gravel. Rearing habitat for MCR steelhead in Frank Creek is limited to the lower 100 yards of stream on BLM land, where a 6-foot headcut blocks upstream access. Fish use the area immediately below the barrier.

The effects determination for Squaw Creek was changed from NLAA in 2000 to LAA for 2004 to 2008 because of poor fence maintenance and unauthorized use in 2002 and 2003.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the annual operating instructions (AOI) for the allotment. Additionally, the allotment will be managed to meet PACFISH Resource Management Objectives (RMOs).

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing utilization indicators within their allotments and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements. Emphasis will be on designated monitoring areas (DMA) identified by BLM personnel in riparian areas that are important to MCR steelhead rearing and survival.

1.3.2 Johnson Creek Allotment

Proposed Action

The proposed action for the Johnson Creek Allotment is grazing 436 AUMs from April 1 to November 15. Allowable residual stubble height utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. Johnson, China Hat, and Hide & Seek Creeks flow through this allotment. The Oregon Department of Fish and Wildlife (ODFW) spawning and rearing map identifies 0.75 miles of documented MCR steelhead use within the allotment.

Johnson Creek (1.3 miles within 5 segments of public land) was surveyed in 1980. Stream habitat and channel stability were rated as good. This rating was based on dense conifer stands lining the streambanks, good amounts of large instream wood, large substrate material (2% bedrock, 10% large boulders, 20% small boulders, 35% cobble), and good stream shade from conifers. Spawning gravel is limited in Johnson Creek. Stream gradient is about 5%. Although high flows have washed out portions of old logging roads, the steepness of the stream and high flows seem to prevent silt/gravel accumulation in the channel.

Hide & Seek Creek (0.7 miles in 2 segments) is dry in summer months and does not support MCR steelhead populations. Dominant vegetation includes bluegrass, Douglas-fir, juniper, and pinegrass.

Past cattle grazing has degraded China Hat Creek, and historically, the riparian area has been heavily grazed. China Hat Creek does not maintain flow throughout the summer, and has limited habitat available for MCR steelhead. There is no known utilization by MCR steelhead.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the allotment. Additionally the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.3 Dixie Allotment

Proposed Action

The proposed action for the Dixie Allotment is grazing 319 AUMs from June 1 to October 31. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. Standard, Dixie, Bear, and Comer Creeks flow through this allotment. ODFW spawning and rearing map identifies 4.60 miles of documented MCR steelhead use within the allotment.

Good fish habitat for MCR steelhead spawning and rearing exists in Dixie (2.4 miles), Standard (1.1 miles), West Fork Standard (0.9), and Comer (0.2 miles) Creeks. Water in these creeks is generally cold and clear. Large instream wood is common, and riparian vegetation provides good cover. Streambanks are stable and well-vegetated. Past mining activities have increased levels of fine sediment in Dixie and Standard Creeks. Low summer stream flows in Dixie and Standard Creeks (below irrigation diversions) are the primary limiting factor for MCR steelhead habitat in this allotment.

Alternate year use of these two pastures places livestock on either Dixie Creek and Standard Creek or Bear Creek every other year. There is potential for direct effects[1] on BLM-managed parcels of Dixie Creek and Standard Creek, however, most segments are narrow, rocky channels with good hardwood vegetation but minimal ground vegetation on the floodplain because of mining. Livestock tend to spend limited time in the riparian zone. Bear Creek has approximately 0.2 miles of spawning habitat on BLM land, and direct effects are possible if

[1] Direct effects are those which contribute to the immediate loss or harm to individual fish or embryos (*e.g.*, directly stepping on a fish, trampling a redd that results in the actual destruction of embryos, or dislodging the embryos from the protective nest and ultimately destroying eggs).

spawning occurs in this segment. The floodplain is wide and there is potential for indirect effects[2] due to bank instability and lack of riparian vegetation.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the allotment. Additionally, the allotment will be managed to meet RMOs.

- Pasture rotation and utilization standards to minimize the impacts of grazing on listed MCR steelhead and riparian habitats will be used.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.4 Murderer's Creek Allotment

Proposed Action

The proposed action for the Murderer's Creek Allotment is grazing 860 AUMs from April 20 to September 20. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. Within the allotment are the following miles of streams: South Fork John Day River (SFJDR) (2.6), Murderer's Creek (0.5), Cabin Creek (0.6), Flat Creek (0.6), Oliver Creek (1.0), Tunnel Creek(0.2), Johnson Creek (0.5), and Cougar Gulch (1.6). MCR steelhead spawning and rearing habitat exists in the SFJDR, Murderer's, Cabin, and Flat Creeks and potentially in Cougar Gulch.

Approximately 16,000 acres of ODFW land is within the allotment and is managed with the BLM lands. Elevations in the allotment range from 2600 to 5200 feet. Different grazing applications are used to meet plant physiology needs. Three riparian pastures receive livestock use from May 1 to May 20 for 2 years and are rested the third year. Six upland pastures rotate in a 3-year sequence which includes a use during the critical growing season, a use after the critical growing season (deferment), and then a complete rest. The grazing season for these 6 pastures is May 1 to June 1, or May 20 to July 1. Four pastures in the area are used in a deferred rotation in

[2] Indirect effects are those impacts which occur at a later time, causing loss of specific habitat features (*e.g.*, undercut banks, sedimentation of spawning beds), localized reductions in habitat quality (*e.g.*, sedimentation, loss of riparian vegetation, changes in channel stability and structure), and, ultimately, cause loss or reductions of entire populations of fish, or widespread reductions in habitat quantity and/or quality.

which they are only used once during the critical growing season and then are used either before or after the critical season for 3 more years. The grazing season here is from April 20 to September 20. Fencing excludes most of the SFJDR and all of Murderer's Creek, therefore, the likelihood of direct effects is minimal. The exclusion of livestock will also limit potential for indirect effects.

Physical habitat for MCR steelhead in the SFJDR is good, but high temperature and fine sediment levels limit MCR steelhead production potential. Photopoints showed that the riparian zone of the SFJDR has improved between 1979 and 1990. The SFJDR in this area has a diverse vegetative community and age structure.

Murderer's Creek has good habitat for MCR steelhead, with good substrate, cover from vegetation, and instream wood. Cougar Gulch has marginal spawning and rearing habitat for MCR steelhead, limited by intermittent summer flows. Cougar Gulch has a patchy overstory of cottonwoods and fair vegetative community consisting of willows, dogwood, and shrubs along its banks. Information is not available for habitat conditions in Cabin and Flat Creeks.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the allotment. Additionally, the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.5 North Fork Allotment

Proposed Action

The proposed action for the North Fork Allotment is grazing 316 AUMs from May 1 to May 31. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. The NFJDR, Mallory, and Potamus Creeks flow through the North Fork Allotment and provide MCR steelhead spawning and rearing habitat.

Riparian condition appears to be improving since grazing management was modified to spring use only in 1996. Understory vegetation has been slow to establish in some areas due to rocky or cut streambanks. The NFJDR and Potamus and Mallory Creeks were assessed as functioning at risk in 1995. Ice scour appears to be a problem in the NFJDR subbasin. Ice flows gouge and destabilize streambanks, increasing their susceptibility to peak runoff erosive forces.

There is potential for direct effects on MCR steelhead in Mallory and Potamus Creeks from livestock grazing. Early season use appears to improve riparian vegetation which reduces potential indirect effects.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the allotment. Additionally the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.
- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.6 Franks Creek Allotment

Proposed Action

The proposed action for the Franks Creek Allotment is grazing 223 AUMs from April 1 to November 30. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. Franks and Ferris Creeks flow through the Franks Creek Allotment and provide MCR steelhead spawning and rearing habitat.

The Franks Creek Allotment has two pastures (North and South). The South pasture is grazed from April 15 to May 15, and the North pasture is grazed May 16 to August 30. The BLM has increased compliance monitoring to control unauthorized use, which has been a problem in the past.

The BA indicates that both Franks Creek and Ferris Creek have poor habitat conditions for MCR steelhead. MCR steelhead use Franks Creek for spawning and rearing, however, spawning habitat is limited on BLM-managed land and riparian condition and potential are fair to poor on Franks Creek. A barrier falls between the North and South pastures prevents access to 0.8 mile

of potential habitat. Low flows limit potential for spawning and rearing. Connection to the John Day River (JDR) occurs about two years in five. Most early season flows go sub-surface, and connectivity only occurs in February and March. Summer rearing is confined to short stream segments where springs maintain pool habitat. Hot season grazing has limited recovery potential historically. In addition, the road beside the stream limits channel width. Cattle are now generally in higher elevation pastures during the hot season. Grazing is not likely to occur in 2004.

Potential for direct effects is low. High bank rock content and narrow floodplain limit livestock access that would lead to indirect effects. Potential for riparian vegetation is limited because the road occupies what little floodplain there is.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the allotment. Additionally the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.7 Johnny Cake Mountain Allotment

Proposed Action

The proposed action for the Johnny Cake Mountain Allotment is grazing 30 AUMs from April 1 to November 30. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. The NFJDR and Cabin Creek flow through the Johnny Cake Mountain Allotment, and provide MCR steelhead spawning and rearing habitat. Riparian areas on the NFJDR are improving but are subject to periodic ice and high flows.

BLM land along the NFJDR is grazed from April 1 to May 31.

Riparian condition is good on Cabin Creek. Willows dominate, and hawthorne, syringa, juniper, cottonwood, and Ponderosa pine are also present. Sedges and rushes are common along the streambank. Substrate in Cabin Creek is primarily cobble and gravel.

There is potential for direct effects on MCR steelhead in Cabin Creek, however, good riparian conditions suggest limited use by cattle. The present riparian vegetation contributes to bank stability and shade for rearing habitat. The pasture along river was not used in 2002 to 2003.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the allotment. Additionally the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.8 Big Baldy Allotment

Proposed Action

The proposed action for the Big Baldy Allotment is grazing 600 AUMs from April 15 to May 31. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. The SFJDR, and Deer, Sunflower, Indian, and Wildcat Creeks flow through the Big Baldy Allotment and provide MCR steelhead spawning and rearing habitat.

There are two pastures in this allotment (North and South). On odd calendar years (2005 and 2007) the North pasture is rested and the South pasture is grazed. On even calendar years (2004, 2006, and 2008) the sequence is reversed. This grazing sequence has been followed since 1990. Actual use has varied from 150 to 530 AUMs, averaging 375 AUMs. Every other year, Deer Creek and the SFJDR have potential for direct effects in the North Pasture. Spawning generally occurs upstream from BLM land on USDA Forest Service (FS) lands on Deer Creek.

In the North Pasture, good MCR steelhead spawning and rearing habitat exists in Deer Creek and the SFJDR up to Izee Falls on the SFJDR. MCR steelhead distribution does not reach the South pasture because Izee Falls is a barrier to upstream passage. Sunflower, Indian, and Wildcat Creeks and the SFJDR above Izee Falls are in the South Pasture. Water quality problems occur in this allotment and include high water temperature and unnaturally high fine sediment levels. Significant upland slope soil erosion has occurred during summer storms in the South Pasture. Soil erosion was centered in dry draws east of the SFJDR. Deer Creek riparian vegetation is

extremely thick in most areas and poses a significant barrier to cattle. In addition, the large boulder substrate and steep gradient of most stretches of the stream further discourage cattle entry. Small portions of the stream on public lands are less vegetated and less steep, and cattle usage in these areas is greater. The BA indicates that it is unlikely that cattle can access most of the potential spawning and rearing habitats along Deer Creek.

Riparian conditions are good to excellent on all streams in the allotment, showing continuing improvement. Various spot problems exist where riparian vegetation is suppressed from livestock use, but these are minor in relation to the entire allotment. Roads beside Sunflower, Deer and Indian Creeks and the SFJDR do limit riparian potential in some places and potentially increase levels of fine sediments in these streams. The riparian zone is functioning well on the SFJDR, but not as well on Deer, Indian, and Sunflower Creeks.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the grazing allotment. Additionally, the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.
- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.9 Pointer Allotment

Proposed Action

The proposed action for the Pointer Allotment is grazing 12 AUMs from May 1 to June 15. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. Little Pine Creek flows through the Pointer Allotment and provides MCR steelhead spawning and rearing habitat. The BA indicates that no grazing has occurred on this allotment for 30 to 40 years. The grazing season was adjusted to May 1 to June 15 in 1998, though grazing has not occurred. Grass coverage is good, and it does not appear that livestock have grazed along the stream for years. Grazing will not be permitted in this allotment until a fence is constructed to protect sensitive streambanks.

This section of Little Pine Creek (0.6 miles) has good fish habitat and is a known MCR steelhead spawning and rearing stream although the stream is only 2 to 4 feet wide. Water temperatures

rarely meet state standards. Instream wood is fairly common. The Little Canyon Mountain Fuels Reduction Project (NOAA Fisheries Nos.: 2003/01031 and 2003/1439) has identified a culvert that will be replaced, however, MCR steelhead may not be able to utilize upstream areas because of intermittent flows approximately 300 feet upstream from the culvert.

Riparian habitat of Little Pine Creek is good with a dense shrub understory (alders) and moderately dense overstory of mature pine and fir trees. Streambanks are well vegetated with grass and forbs and are quite stable. The stream channel of Little Pine Creek is narrow with many relatively deep areas. Accelerated erosion of adjacent roads and trails is delivering fine sediments to the stream. Off-road vehicles are damaging uplands and increasing overland erosion. The Little Canyon Mountain Fuels Reduction Project will close several roads and improve the main road to reduce road generated sediments. In addition, a fence will be constructed on the east side of Little Pine Creek to prevent livestock access to the stream on BLM-managed lands.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the grazing allotment. Additionally, the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.10 Cottonwood Creek Allotment

Proposed Action

The proposed action for the Cottonwood Creek Allotment is grazing 204 AUMs from April 15 to November 15. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. Cottonwood Creek flows through the Cottonwood Creek Allotment, and provides MCR steelhead spawning and rearing habitat. There are 4 pastures in the allotment, and the BA indicates that, historically, there have been problems managing it.

In 1990, the BLM changed the grazing plan on the riparian pastures to spring use between April 1 and June 15. However, the permittee has not followed the new schedule which was designed

to improve riparian conditions. Additionally, actual use has consistently been well above the AUMs allowed on the grazing permit. Number of AUMS were: 272, 377, 446, 424, 569, 379, and 274 AUMs in 1988, 89, 90, 91, 92, 93, 95, and 1997, respectively. Enforcement has been difficult since most of the riparian habitat is on private land.

This section of Cottonwood Creek has marginal spawning and rearing habitat quality for MCR steelhead in its present condition. Spawning surveys conducted by BLM and ODFW in 2002 and 2003 in the 2.2 miles of stream below the Malheur National Forest (MNF) boundary found 27 redds and 18 redds, respectively. Of the 2.2 miles surveyed, approximately 0.2 stream miles occur on BLM-managed lands. Riparian vegetation potential is good but has been repressed by heavy grazing. Season-long grazing for decades has reduced vegetation cover, decreased streambank stability, and has likely increased width to depth ratios. High water temperatures in Cottonwood Creek are a problem originating within this allotment. Private lands in the allotment border National Forest lands.

Several riparian enclosures were constructed in the 1970s and are now in disrepair. Poor management on this allotment has reduced potential for MCR steelhead spawning and rearing. Timely pasture moves are needed to protect riparian areas. Monitoring to identify spawning segments will continue in 2004, and redds will be protected. Most of the spawning likely occurs on FS lands upstream from the Cottonwood Creek allotment where habitat is in better condition. Rearing habitat within the allotment is poor due to high width/depth ratio, high temperatures, unstable banks, and poor overstory riparian vegetation.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the grazing allotment. Additionally, the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.11 Rockpile Allotment

Proposed Action

The proposed action for the Rockpile Allotment is grazing 928 AUMs from March 4 to May 10. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not

exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. The SFJDR, Frazier Creek, Martin Creek, and Cougar Gulch flow through the Rockpile Allotment and provide MCR steelhead spawning and rearing habitat.

Grazing is a rest rotation strategy with nine pastures that are used between March 4 and September 15 (including lands other than BLM). Before 1994, grazing management was poor on this allotment, with riparian areas being overused and little use on uplands. The allotment was rested in 1994 and 1995, and a rotation system was implemented in 1996. Unauthorized use in pastures along the SFJDR was a problem in 1997 and 1998, when the permittee was improving fences and gaining ranching experience.

The SFJDR in the Rockpile allotment provides fair to good habitat for MCR steelhead. Fair cover from deep pools, vegetation, instream wood, and substrate exists in most areas. High sediment loads and cobble embeddedness limit production capacities because quality of rearing habitat is impaired, as is spawning habitat. Elevated water temperatures have also degraded fish habitat. These conditions are most likely due to activities upstream from the allotment as well as past management in the allotment. Frazier Creek has about 0.2 miles of MCR steelhead habitat; a 6-foot boulder falls appears to be an upstream barrier, as no fish were observed above the falls. Cougar Gulch may provide periodic spawning habitat but no fish have been observed rearing in the stream during a recent assessment.

The riparian zone of the SFJDR is functioning well, and Frazier Creek, Cougar Gulch and Martin Creek are unrated. Ecological condition is good at study sites along the SFJDR, with a stable, possibly improving trend. This is not typical for all of the SFJDR corridor in this allotment, since the riparian areas were overused before 1994. Comparisons of riparian photopoints taken from 1979 and 1990 indicate that conditions have improved. Riparian conditions along Martin and Frazier Creeks are fair to good. Fall grazing and unauthorized use have likely limited the upward trend in riparian condition. Upland conditions are good, with bunchgrass dominating drier sites and Idaho fescue in higher forested sites.

Spawning potential in SFJDR in this allotment is limited because the substrate is embedded. Rearing is limited because of decreased pool volume and elevated temperatures. Fencing excludes livestock on most of the SFJDR and grazing rotation has improved riparian vegetation. Direct effects are possible on 0.2 miles of Frazier Creek below the barrier falls. ODFW does not identify Cougar Gulch as spawning and rearing habitat, and it is unknown whether use by MCR steelhead occurs. Indirect effects should be minimal with the current grazing plan. In 2003, the use period changed to approximately 1 month earlier than scheduled. The lessee was successful in keeping livestock off the SFJDR. IIT monitoring showed compliance with utilization standards. There is potential for redd trampling, however, good herding and timely pasture moves prevented adverse effects in 2003.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the grazing allotment. Additionally, the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.12 Little Wall Creek Allotment

Proposed Action

The proposed action for the Little Wall Creek Allotment is grazing 53 AUMs from April 1 to May 31. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. The Little Wall, Bacon, and Three Troughs Creeks flow through the Little Wall Creek Allotment.

Grazing season changed in 1998 to spring use only. Good upland ground cover exists. Little Wall, Bacon, and Three Troughs Creeks are fair to good MCR steelhead habitat, but past grazing and adjacent road construction activity has likely increased width to depth ratio and diminished riparian vegetation. Streambanks show evidence of instability (cutbanks and bank sloughing). Hardwoods are lacking above the National Forest boundary. This segment is the lower end of a wet meadow with good sedge (*carex* species) component.

Little Wall Creek and Bacon Creek are both identified as spawning and rearing habitat for MCR steelhead. Approximately 0.4 miles of stream along the east boundary is accessible to livestock. Potential for direct effects is increased because of the road beside the stream. Indirect effects are also increased by road access along the stream.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the grazing allotment. Additionally, the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring
- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.13 Canyon Mountain Allotment

Proposed Action
The proposed action for the Canyon Mountain Allotment is grazing 5 AUMs from May 1 to June 15. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. Little Pine Creek flows through the Canyon Mountain Allotment, and provides spawning and rearing habitat for MCR steelhead.

The grazing season on the Canyon Mountain Allotment changed to May 1 to June 15 in 1998. The 0.4 miles of Little Pine Creek within the allotment are in fair to good condition. ODFW indicates MCR steelhead spawning is downstream from this allotment approximately 0.3 miles. The stream has historically been impacted by mining activities. Bank stability is provided by rock content. Riparian condition is improving but is still recovering from past mining disturbances. Some hardwood browsing occurs, but effects are expected to be minimal.

Protective Measures
- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the grazing allotment. Additionally, the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring
- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.14 Two County Allotment

Proposed Action

The proposed action for the Two County Allotment is grazing 1,105 AUMs from April 1 to November 30. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. The JDR and Rudio, Holmes, Burnt Corral, Deep, Rose, Bone, McGinnis, Harry, and Branson Creeks flow through the Two County Allotment.

Use in the allotment is generally light actual AUMs in previous years have been: 1992 (400), 1996 (573), and 1997 (436). A steep rimrock canyon on Rudio Creek limits access for livestock use along the creek. The allotment is used from April 1 to November 30, and pasture rotations are done when needed. Livestock are moved around the allotment by a rider. Permittees have not been following a strict rotation schedule, but move cattle whenever utilization standards are approached. Excess use was documented on Holmes Creek in 2003 before the livestock were moved.

The BA indicates that 4.8 miles of the 7.8 miles of perennial stream within the allotment are non-fish-bearing. Three miles of Branson Creek within the allotment are intermittent. Rudio Creek provides good MCR steelhead habitat and is fish-bearing for the 1.5 miles all of which occur in the allotment. MCR steelhead are reported to utilize 0.6 miles of Burnt Corral Creek, but this has not been verified by BLM and no information is available about the habitat condition for fish. Stream temperatures meet state standards, large instream wood is fairly abundant, escape cover is good. Spawning gravel is limited given the stream gradient and dominance of step pool cascade type habitat. Redband and MCR steelhead are common in these 3 BLM-managed segments.

Riparian habitat is rated as fair in Holmes Creek. Holmes Creek has 1.8 miles within the allotment which is considered fair MCR steelhead habitat up to the mouth of Burnt Corral Creek at river mile (RM) 1.0. Grazing pressure has trampled streambanks and limited vegetative cover along Holmes Creek. Logging has removed some overstory conifers as well. Grazing along the stream has affected many of the riparian shrubs. Along Holmes Creek, the BA indicates there is a low potential for direct effects because of the narrow, steep channel and limited spawning gravel. Riparian vegetation is fair and stability is good because of high bank rock content, however, some bank damage has occurred at habitual crossing locations.

Rudio Creek has good riparian habitat. Shrub cover and bank stability are in good condition. The gradient averages 8% in upper segments and 4 to 5% in lower segments. Rudio Creek has limited access and direct effects are low because of later season of use. McGinnis, Rose, Bone, and Harry Creeks are intermittent and no spawning or rearing has been identified by ODFW. The JDR within this allotment is migratory habitat for MCR steelhead.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the grazing allotment. Additionally, the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.15 Kinzua Allotment

Proposed Action

The proposed action for the Kinzua Allotment is grazing 1,170 AUMs from May 1 to October 31. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. Squaw, Rudio, Franks, and Gilmore Creeks flow through the Kinzua Allotment.

Most of the allotment is forested upland habitat. Ground cover is good with ample forage from elk sedge, bunchgrasses, Idaho fescue, mountain brome and cheatgrass. Public lands are scattered widely. The allotment is used from May 1 to October 31, and pasture rotations are done when needed. Permittees have not been following a strict rotation schedule, but move cattle whenever utilization standards are approached.

Past actual use in AUMs has been: 1989(934), 1990 (992), 1993 (1020), 1994 (934), 1995 (795), 1996 (438), 1997 (680).

Squaw, Rudio, and Gilmore Creeks all provide spawning and rearing habitat for MCR steelhead. Fish habitat in the 1.7 miles of Squaw Creek within the allotment is fair to good, but impacted by siltation from logging and road building in the drainages as well as livestock use. A 1981 riparian habitat inventory of Squaw Creek rated these segments as fair to poor in condition, citing siltation from logging activities, cattle trampling and general lack of riparian species. Streambank stability appears good along Squaw Creek, with some scattered cutbanks and trampled areas. Some large wood is present within its stream channel

Habitat in the 0.4 miles of Rudio Creek within the allotment is fair, with boulders being the dominant cover type. Only a modest riparian vegetation component of willows, *Ribes* species and forbs was present.

Gilmore Creek has fair fish habitat in the 0.6 miles present in the allotment except where the stream was channelized next to the adjacent road. Little vegetation is present along the newly-constructed channel. Franks Creek flows for 1.7 miles within the allotment and has been poor fish habitat, but is improved slightly in recent years. MCR steelhead access to this portion is blocked downstream.

About 5000 acres are proposed for disposal in a land exchange. Access to all streams is increased by riparian roads. Potential for direct effects is reduced by late season use June 1 to September 1 but redd trampling is possible in the early season. Indirect effects are associated with hardwood browsing of limited shrubs. Roads have reduced riparian vegetation potential on most stream segments.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the grazing allotment. Additionally, the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

1.3.16 Creek Allotment

Proposed Action

The proposed action for the Creek Allotment is grazing 63 AUMs from April 5 to April 22, and from October 25 to November 15. Allowable utilization on the riparian greenline will be 6 inches. The streambanks will not exhibit more than 10% damage, and riparian shrubs will not exhibit more than light to moderate browsing as a result of cattle grazing. Livestock will be moved when any of these standards are approached. Cottonwood Creek flows through the Creek Allotment.

Since 1990, the allotment has been grazed in early spring (April 15 to May 15) or late fall (October 15 to October 30). Actual grazing use (AUMS) has been: 1984(34), 1987 (56), 1988 (43), 1993 (33), 1996 (40).

Cottonwood Creek is a perennial stream with moderate gradient. MCR steelhead use Cottonwood Creek as spawning and rearing habitat. The riparian zone of Cottonwood Creek is functioning at risk. High water temperatures occurring in the stream are likely caused by upstream sources. A diverse understory of shrubs, willows, birch and alders provide good streambank stability. Black cottonwoods are common, providing shade to the stream.

There is potential for direct effects during the April 15 to May 15 grazing season. However, during this time period, flows are generally high and cool temperatures discourage livestock from lounging in the riparian zone. A fence on the west side of the creek limits livestock from crossing back and forth.

Protective Measures

- PACFISH standards and guidelines for grazing (GM-1 thru GM-4) will be incorporated into the AOI for the grazing allotment. Additionally, the allotment will be managed to meet RMOs.

- Creeks within the allotment will be surveyed for steelhead spawning activity and redd presence. When redds are present in areas where cattle have access, measures such as temporary fencing will be taken to avoid the possibility of trampling.

Monitoring

- Permittees will be responsible for monitoring grazing indicators and meeting end-of-season utilization standards.

- IIT monitoring will take place in selected pastures to ensure compliance with PACFISH requirements.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

The MCR steelhead evolutionarily significant unit (ESU) was listed as threatened under the ESA by NOAA Fisheries on March 25, 1999 (64 FR 14517). Protective regulations for MCR steelhead were issued under section 4(d) of the ESA on July 10, 2000 (65 FR 42422). Biological information concerning the MCR steelhead is found in Busby *et al.* (1996). The major drainages occupied by the MCR steelhead ESU are the Deschutes, John Day, Klickitat, Umatilla, Walla Walla, and Yakima River systems.

NOAA Fisheries (2003) has indicated that the 5-year average (geometric mean) abundance of natural MCR steelhead was up from previous years' basin estimates in the ESU. The Klickitat, Yakima, Touchet, and Umatilla systems are all well below their interim abundance targets (Table 2). The JDR is at or above their interim targets for abundance. The productivity estimate of the MCR ESU is approximately 0.98, indicating that the productivity of MCR steelhead is slightly below its target of 1.0. NOAA Fisheries biological review team (BRT) has determined that the MCR ESU is likely to become endangered because of stock abundance and long-term, low productivity within the ESU.

Table 2. Interim abundance targets for the MCR steelhead ESU (adapted from NOAA Fisheries 2003).

ESU/Spawning Aggregations*	Interim Abundance Targets	Interim Productivity Objective
Walla-Walla	2,600	Middle Columbia ESU populations are well below recovery levels. The geometric mean Natural Replacement Rate (NRR) will therefore need to be greater than 1.0
Umatilla	2,300	
Deschutes (Below Pelton Dam Complex)	6,300	
John Day		
North Fork	**2,700**	
Middle Fork	**1,300**	
South Fork	**600**	
Lower John Day	3,200	
Upper John Day	**2,000**	

*Populations in bold are addressed in this Opinion

The JDR is the largest river system in the range of MCR steelhead that is free of dams. There is no artificial propagation of steelhead in the system and runs are driven almost exclusively by native stocks, making the JDR system unique within the ESU. However, there is some straying of hatchery fish into the JDR system from the Columbia River (Unterwegner and Gray 1997). The ODFW estimates that since 1987, yearly returns of adult MCR steelhead to the JDR basin have ranged from 3,900 to 36,400, with estimated escapement averaging 13,988 adults. NOAA Fisheries (2003) states that while the JDR system has met or exceeded interim abundance targets for the last 5 years, the long-term trend for abundance is still downward.

The JDR and its tributaries, including the SFJDR, MFJDR, and UJDR subbasin streams, provide spawning, rearing, and migratory habitat for both adult and juvenile life stages of MCR steelhead. In 2002, the redd numbers in these three subbasins were at their highest levels since listing. Adult MCR steelhead enter the Columbia River beginning in the spring and migrate

upriver through the summer, fall, and winter, to their tributary of origin. By early spring, the adults have reached their natal streams and spawn in gravel redds from March to early June. Deposited eggs usually hatch by July of the same year. The resulting juveniles will spend from one to four years rearing to smolt size, then begin their migration to the ocean.

Important features of adult spawning, juvenile rearing, and adult and migratory habitat for this species are substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food (juvenile only), riparian vegetation, space, and safe passage conditions (Bjornn and Reiser, 1991; NOAA Fisheries 1996b; Spence *et al.*, 1996). The habitat features that the proposed project may affect are substrate, water quality, water temperature, water velocity, cover/shelter, food, and riparian vegetation.

2.1.2 Evaluating Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, NOAA Fisheries uses the following steps: (1) Consider the status and biological requirements of the species; (2) evaluate the relevance of the environmental baseline in the action area to the species' current status; (3) determine the effects of the proposed or continuing action on the species; (4) consider cumulative effects; and (5) determine whether the proposed action, in light of the above factors, is likely to appreciably reduce the likelihood of species survival in the wild or adversely modify its critical habitat. In completing this step of the analysis, NOAA Fisheries determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the continued existence of the ESA-listed species or result in destruction or adverse modification of their critical habitat, or both.

In conducting analyses of habitat-altering actions, NOAA Fisheries often defines the biological requirements in terms of a concept called Properly Functioning Condition (PFC) and may apply a "habitat" approach to its analysis (NOAA Fisheries 1999). MCR steelhead survival in the wild depends on the proper functioning of certain ecosystem processes, including habitat formation and maintenance. The restoration of improperly functioning habitat to a more properly functioning condition will likely lead to improved survival and recovery of this listed ESU.

2.1.3 Biological Requirements

The first step NOAA Fisheries uses when applying the ESA section 7(a)(2) evaluation to listed MCR steelhead is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species, taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list MCR steelhead for ESA protection and also considers new data that is relevant to the determination.

The relevant biological requirements are those necessary for MCR steelhead to survive and recover to naturally-reproducing population levels, at which time protection under the ESA would become unnecessary. Adequate population levels safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment. The current status of MCR steelhead, based on their risk of extinction, has not significantly improved since the species was listed.

For this consultation, the biological requirements are habitat characteristics that support successful adult and juvenile migration, spawning and rearing. MCR steelhead survival in the wild depends on proper function of certain ecosystem processes, including habitat formation and maintenance. Restoring functional habitats depends largely on allowing natural processes to increase their ecological function, while at the same time removing adverse impacts of current practices. In analyzing habitat-altering actions and essential habitat elements, NOAA Fisheries defines the biological requirements in terms of a concept called Properly Functioning Condition (PFC) and uses a habitat approach in its analysis (NOAA Fisheries 1999).

2.1.4 Environmental Baseline

The environmental baseline is an analysis of the effects of past, present, human-related, and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The "action area" is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02).

Therefore, the action area for this consultation includes:

1. Buckhorn Creek, Squaw Creek, and Franks Creek in the Squaw Creek Allotment.
2. China Hat Creek, Hide and Seek Creek, and Johnson Creek in the Johnson Creek Allotment.
3. Standard Creek, Dixie Creek, Comer Creek, and Bear Creek in the Dixie Allotment.
4. Flat Creek, Bridge Creek, Murderer's Creek, Cabin Creek, Cougar Gulch, the SFJDR, Oliver Creek, Tunnel Creek, and Johnson Creek in the Murderer's Creek Allotment.
5. The NFJDR, Mallory Creek, and Potamus Creek in the North Fork Allotment.
6. Franks Creek and Ferris Creek in the Franks Creek Allotment.
7. The NFJDR and Cabin Creek in the Johnny Cake Mountain Allotment.
8. Deer Creek, Sunflower Creek, the SFJDR, Indian Creek, and Wildcat Creek in the Big Baldy Allotment.
9. Little Pine Creek in the Pointer Allotment.
10. Cottonwood Creek in the Cottonwood Creek Allotment.
11. The SFJDR, Frazier Creek, Cougar Gulch, and Martin Creek in the Rockpile Allotment.
12. Little Wall Creek, Bacon Creek, and Three Troughs Creek in the Little Wall Creek Allotment.
13. Little Pine Creek in the Canyon Mountain Allotment.
14. Rudio Creek, Holmes Creek, Burnt Corral Creek, the JDR, Rose Creek, Bone Creek, McGinnis Creek, Deep Creek, and Harry Creek in the Two County Allotment.

15. Squaw Creek, Rudio Creek, Gilmore Creek, and Franks Creek in the Kinzua Allotment.
16. Cottonwood Creek in the Creek Allotment.

According to the BA, the UJDR subbasin encompasses 1,375,000 acres from the headwaters of the JDR in the Blue and Strawberry Mountains downstream to its confluence with the NFJDR at river mile (RM) 185 near Kimberly, Oregon. The BLM administers 145,630 acres (10.6%) in the UJDR subbasin. Most of the basin is owned by the MNF or private owners. Small percentages are managed by the Ochoco National Forest and the State of Oregon. Major tributaries within the subbasin include Rock Creek, the SFJDR, Beech Creek, Canyon Creek, Dixie Creek, and Strawberry Creek. Izee Falls is a natural waterfall on the SFJDR at RM 28.5, has been identified as a barrier to upstream migration.

The MFJDR subbasin encompasses 504,500 acres from its headwaters to its confluence with the NFJDR at RM 32.2. The BLM manages 3,975 acres (7.9%) of the subbasin. The MNF manages more than half of the land in the subbasin. Major tributaries to the MFJDR include Clear Creek, Big Creek, and Granite Boulder Creek.

The NFJDR subbasin encompasses 1,187,000 acres from its headwaters to its confluence with the MFJDR at RM 32.2. The BLM manages 35,350 acres (29.9%) of the subbasin. Major tributaries of the NFJDR include Granite Creek, Desolation Creek, Camas Creek, Potamus Creek, Mallory Creek, and Ditch Creek.

Environmental baseline conditions within the action area were evaluated at the project level and watershed scales. The results of this evaluation, based on the "matrix of pathways and indicators" (MPI) described in *Making Endangered Species Act Determinations of Effect for Individual or Grouped Actions at the Watershed Scale* (NOAA Fisheries 1996), follow. This method assesses the current condition of instream, riparian, and watershed factors that collectively provide properly functioning aquatic habitat essential for the survival and recovery of the species. Habitat conditions for the subbasins are summarized in Table 3.

In the UJDR subbasin, the baseline indicators for Dads, Dixie, Standard, W. Fork Standard, Comer, Bull Run, Indian, W. Fork Little Indian, Pine, Bear Gulch, Little Pine, Canyon, Sheep Gulch, Capsuttle, McClellan, Big Canyon, West Birch, West Birch tributary, and East Birch Creeks were combined in one section of the BA. Seven of the 18 habitat indicators in the MPI were rated as "functioning at risk." These are: Physical barriers, substrate embeddedness, wetted width/maximum depth ratio, streambank condition, floodplain connectivity, changes in peak/base flow, and road density and location. Two of the 18, pool frequency and drainage network increase, were rated as "not properly functioning." Three of the habitat indicators were rated as properly functioning: Water temperature, large wood, and disturbance history. The BA also listed four habitat indicators as "properly functioning or at risk." These are: Sediment/turbidity, chemical contamination/nutrients, pool quality, and refugia. Information on riparian reserves was not available and off-channel habitat was not listed. The environmental baseline conditions for each habitat indicator in the MPI are described in the BA and incorporated into this Opinion by reference.

In the MFJDR subbasin, the baseline indicators for the JDR, Flat, Franks, Ferris, Sheep Gulch, Battle and tributaries, Cottonwood, Dyke, Day, Rock and unnamed tributary, Birch, Squaw, Indian, Frank, Buckhorn, Willow, Fopiano, Dick, Johnny, Bull Canyon, Deep, Harry, McGinnis Branson, Bone, Rose, Spring, Holmes, Burnt Corral, Johnson, Hide and Seek, unnamed tributary, and China Hat Creeks were combined in the BA. Seven of the 18 habitat indicators in the MPI were rated as "functioning at risk." These are: Sediment/turbidity, off-channel habitat, streambank condition, floodplain connectivity, changes in peak/base flows, drainage network increase, and road density and location. Five of the 18 were rated as "not properly functioning." These are: Water temperature, large wood, pool frequency, refugia, and wetted width/max depth ratio. Two of the habitat indicators, physical barriers and disturbance history, were rated as "properly functioning." The BA also listed two habitat indicators, substrate embeddedness and pool quality, as "at risk or not properly functioning." Chemical contamination was listed as "properly functioning or at risk." Information on riparian reserves was not available. The environmental baseline conditions for each habitat indicator in the MPI are described in the BA and incorporated into this Opinion by reference.

In the MFJDR subbasin the baseline indicators for tributaries of the MFJDR including Huckleberry Creek, Cole Canyon Creek, Troff Canyon Creek, and Threemile Creek were combined in the BA. Seven of the 18 habitat indicators in the MPI were rated as "functioning at risk." These are: Sediment/turbidity, chemical contaminants/nutrients, substrate embeddedness, pool quality, streambank condition, floodplain connectivity, and drainage network increase. Five of the 18 were rated as "not properly functioning." These are: Water temperature, pool frequency, off-channel habitat, refugia, and wetted width/maximum depth ratio. Three indicators, physical barriers, change in peak/base flows, and disturbance history, were rated as "properly functioning." The BA also listed large wood, and road density and location as "at risk or not properly functioning." Information on riparian reserves was not available. The environmental baseline conditions for each habitat indicator in the MPI are described in the BA, and incorporated into this Opinion by reference.

In the SFJDR subbasin, the baseline indicators for the SFJDR, Johnson Creek, Smoky Creek, Tunnel Creek, Oliver Creek, Youngs Creek, Murderer's Creek, Cabin Creek, Frazier Creek, Martin Creek, Cougar Gulch, Deer Creek, Round Creel, and Dugout Creeks were combined in the BA. Nine of the 18 habitat indicators in the MPI were rated as "functioning at risk." These are: Water temperature, large wood, pool quality, off-channel habitat, refugia, wetted width/maximum depth ratio, floodplain connectivity, changes in peak/base flows, and drainage network increase. Two of the 18, sediment/turbidity and substrate embeddedness, were rated as "not properly functioning." Five of the habitat indicators were rated as "properly functioning." These are: Chemical contamination/nutrients, physical barriers, pool frequency, streambank condition, and disturbance history. The BA also listed road density and location as "at risk or not properly functioning." Information on riparian reserves was not available. The environmental baseline conditions for each habitat indicator in the MPI are described in the BA and incorporated into this Opinion by reference.

In the SFJDR subbasin, the baseline indicators for the SFJDR, Sunflower Creek, Wildcat Creek, Indian Creek, Sock Hollow Creek, Dry Soda Creek, Poison Creek, and Flat Creek were combined in the BA. These streams are all above Izee Falls, a natural barrier to upstream migration of MCR steelhead. Eight of the 18 habitat indicators in the MPI were rated as "functioning at risk." These are: Chemical contamination/nutrients, pool quality, off-channel habitat, wetted width/maximum depth ratio, streambank condition, changes in peak/base flows, and drainage network increase, and road density and location. Three of the 18 were rated as "not properly functioning." These are: Water temperature, large wood, and pool frequency. Disturbance history was rated as properly functioning. The BA also listed sediment/turbidity as "at risk or not properly functioning" and floodplain connectivity as "properly functioning to functioning at risk." Information on riparian reserves was not available and refugia was not rated because MCR steelhead are unable to access the area. The environmental baseline conditions for each habitat indicator in the MPI are described in the BA and incorporated into this Opinion by reference.

In the BA, the baseline indicators for the NFJDR were listed separately from tributaries. Seven of the 18 habitat indicators in the MPI were rated as "functioning at risk." These are: Sediment/turbidity, substrate embeddedness, pool quality, streambank condition, floodplain connectivity, drainage network increase, and road density and location. Seven of the 18 were rated as "not properly functioning." These are: Water temperature, large wood, pool frequency, off-channel habitat, refugia, wetted width/maximum depth ratio, and changes in peak flow/base flow. Three indicators, chemical contamination, physical barriers, and disturbance history, were rated as properly functioning. Information on refugia was not available. The environmental baseline conditions for each habitat indicator in the MPI are described in the BA and incorporated into this Opinion by reference.

In the NFJDR subbasin the baseline indicators for tributaries of the NFJDR including Sulphur Gulch, Hunter Creek, Potamus Creek, Mallory Creek, Graves Creek, Squaw Creek, Cabin Creek, Little Wall Creek, Bacon Creek, Three-Trough Creek, Cottonwood Creek, East Fork Cottonwood Creek, Board Creek, Cougar Creek, Cougar tributary, Squaw Creek, West Fork Cochran Creek, Rudio Creek, Gilmore Creek, Straight Creek, and Birch Creek were combined in the BA. Eight of the 18 habitat indicators in the MPI were rated as "functioning at risk." These are: Sediment/turbidity, substrate embeddedness, off-channel habitat, streambank condition, floodplain connectivity, changes in peak/base flows, and drainage network increase. Three of the 18, pool frequency, refugia, and wetted width/maximum depth ratio, were rated as "not properly functioning." Three indicators - chemical contamination/nutrients, physical barriers, and disturbance history - were rated as properly functioning. The BA also listed water temperature, large wood, and road density and location as "at risk or not properly functioning." Information on riparian reserves was not included. The environmental baseline conditions for each habitat indicator in the MPI are described in the BA and incorporated into this Opinion by reference.

Table 3: Summary of subbasin conditions in the action area

MPI Pathways	MPI Indicators[1]	Subbasins						
		UJDR[2]	MFJDR		SFJDR		NFJDR[7]	NFJDR Tribs[8]
			A[3]	B[4]	A[5]	B[6]		
Water Quality	Temperature	PF	NPF	NPF	FAR	NPF	NPF	FAR or NPF
	Sediment	PF or FAR	FAR	FAR	NPF	FAR or NPF	FAR	FAR
	Chemical Contaminants/ Nutrients	PF or FAR	PF or FAR	FAR	PF	FAR	PF	PF
Access	Physical barriers	FAR	PF	PF	PF	N/A	PF	PF
Habitat Elements	Substrate Embeddedness	FAR	FAR or NPF	FAR	NPF	FAR or NPF	FAR	FAR
	Large Woody Debris	PF	NPF	FAR or NPF	FAR	NPF	NPF	FAR or NPF
	Pool Frequency	NPF	NPF	NPF	PF	NPF	NPF	NPF
	Pool Quality	PF or FAR	FAR or NPF	FAR	FAR	FAR	FAR	FAR
	Off Channel Habitat	U	FAR	NPF	FAR	FAR	NPF	FAR
	Refugia	PF or FAR	NPF	NPF	FAR	U	NPF	NPF
Channel Conditions & Dynamics	Width/depth ratios	FAR	NPF	NPF	FAR	FAR	NPF	NPF
	Streambank Condition	FAR	FAR	FAR	PF	FAR	FAR	FAR
	Floodplain connectivity	FAR	FAR	FAR	FAR	PF or FAR	FAR	FAR
Flow/ Hydrology	Change in Peak Base Flow	FAR	FAR	PF	FAR	FAR	NPF	FAR

MPI Pathways	MPI Indicators[1]	Subbasins						
		UJDR[2]	MFJDR		SFJDR		NFJDR[7]	NFJDR Tribs[8]
			A[3]	B[4]	A[5]	B[6]		
	Drainage Network Increase	NPF	FAR	FAR	FAR	FAR	FAR	FAR
Watershed Condition	Road Density and Location	FAR	FAR	FAR or NPF	FAR OR NPF	FAR	FAR	FAR or NPF
	Disturbance History	PF	PF	PF	PF	PF	PF	PF
	RHCAs	U	U	U	U	U	U	U

[1] The condition of each MPI parameter is indicated in the following manner:
PF= properly functioning, **FAR**= functioning at risk, **NPF**= not properly functioning, **U**=data unavailable.
[2] Includes Dads, Dixie, Standard, W. Fork Standard, Comer, Bull Run, Indian, W. Fork Little Indian, Pine, Bear Gulch, Little Pine, Canyon, Sheep Gulch, Capsuttle, McClellan, Big Canyon, West Birch, West Birch tributary, and East Birch Creeks.
[3] Includes Flat, Franks, Ferris, Sheep Gulch, Battle and tributaries, Cottonwood, Dyke, Day, Rock and unnamed tributary, Birch, Squaw, Indian, Frank, Buckhorn, Willow, Fopiano, Dick, Johnny, Bull Canyon, Deep, Harry, McGinnis Branson, Bone, Rose, Spring, Holmes, Burnt Corral, Johnson, Hide and Seek, unnamed tributary, and China Hat Creeks.
[4] Includes Huckleberry Creek, Cole Canyon Creek, Troff Canyon Creek, and Threemile Creek.
[5] Includes SFJDR, Johnson Creek, Smoky Creek, Tunnel Creek, Oliver Creek, Youngs Creek, Murderer's Creek, Cabin Creek, Frazier Creek, Martin Creek, Cougar Gulch, Deer Creek, Round Creel, and Dugout Creeks.
[6] Includes SFJDR, Sunflower Creek, Wildcat Creek, Indian Creek, Sock Hollow Creek, Dry Soda Creek, Poison Creek, and Flat Creek.
[7] Includes NFJDR only.
[8] Includes Sulphur Gulch, Hunter Creek, Potamus Creek, Mallory Creek, Graves Creek, Squaw Creek, Cabin Creek, Little Wall Creek, Bacon Creek, Three-Trough Creek, Cottonwood Creek, East Fork Cottonwood Creek, Board Creek, Cougar Creek, Cougar tributary, Squaw Creek, West Fork Cochran Creek, Rudio Creek, Gilmore Creek, Straight Creek, and Birch Creek.

2.1.5 Analysis of Effects

In this Opinion, the effects determination was made by evaluating current aquatic conditions (the environmental baseline) and predicting how the proposed action would affect them. The effects of actions are expressed in terms of the expected effect (restore, maintain, or degrade) on aquatic habitat elements and indicators in the action area.

Impacts of livestock grazing on stream habitat and fish populations can be separated into direct and indirect effects. Direct effects are those which contribute to the immediate loss or harm to individual fish, embryos, or habitat (*e.g.*, directly stepping on a fish, trampling a redd that results in the actual destruction of embryos, dislodging the embryos from the protective nest and ultimately destroying eggs, or trampling a bank). Indirect effects occur at a later time, causing loss of specific habitat features (*e.g.*, undercut banks, sedimentation of spawning beds), localized reductions in habitat quality (*e.g.*, sedimentation, loss of riparian vegetation, changes in channel stability and structure), and, ultimately, cause loss or reductions of entire populations of fish, or widespread reductions in habitat quantity and/or quality.

2.1.5.1 Direct Effects on MCR Steelhead

Direct effects of livestock grazing may occur when livestock enter the streams occupied by MCR steelhead to loaf, drink, or cross the stream. During the early phases of their life cycle, MCR steelhead have little or no mobility, and large numbers of embryos or young are concentrated in small areas. Livestock can trample redds and destroy or dislodge embryos and alevins. Belsky *et al.* (1997) review these direct influences on stream and riparian areas. Livestock wading in streams can kill at least as many eggs and pre-emergent fry as a human wading (Roberts and White 1992). In this investigation, a single wading incident on a simulated spawning bed killed 43% of pre-hatching embryos. In a July 12, 2000, occurrence of unauthorized livestock grazing in the Sullens Allotment on the MNF, all five documented MCR steelhead redds in a meadow area of Squaw Creek, a Rosgen C-type stream channel (Rosgen 1996) in the MFJDR subbasin, were trampled by cattle (Forest Service memorandum, August 17, 2000).

Direct impacts on MCR steelhead spawning areas can be avoided by scheduling grazing in pastures containing spawning habitat after July 15 or by excluding known spawning areas from livestock access. The ODFW guidelines for the timing of in-water work in the JDR basin, which are designed to protect salmonid species, do not allow in-water work in any stream in the basin before July 15. The period during which spawning MCR steelhead adults may be susceptible to harassment, or eggs and pre-emergent fry susceptible to trampling by livestock, is from March 15 to July 15 in the JDR basin streams. In some allotments or pastures, there are pre-existing natural topographic, geologic, and vegetative features or high spring water flows that naturally exclude or minimize livestock use from spawning areas. Other forms of take,[3] such as harassment of MCR steelhead by livestock resulting in MCR steelhead behavioral modifications, are more difficult to address in the context of a large-scale grazing program. Harassment can be reduced in the long term by rangeland management that results in better riparian and in-channel habitat conditions, and creates more cover and other important habitat features conducive to MCR steelhead survival and recovery.

[3] Take is defined in the ESA as: "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

Cattle wading into a stream to loaf, drink, or cross the stream may frighten juvenile MCR steelhead from streamside cover. Once these juveniles are frightened from cover and swim into open water, they become more susceptible to predation by larger fish and avian predators. However, NOAA Fisheries believes that this is a minimal risk for juvenile salmonids.

2.1.5.2 Direct and Indirect Effects on MCR Steelhead Habitat

Numerous symposia and publications have documented the detrimental effects of livestock grazing on stream and riparian habitats (Johnson *et al.* 1985; Menke 1977; Meehan and Platts 1978; Cope 1979; American Fisheries Society 1980; Platts 1981; Peek and Dalke 1982; Ohmart and Anderson 1982; Kauffman and Krueger 1984; Clary and Webster 1989; Gresswell *et al.* 1989; Kinch 1989; Chaney *et al.* 1990, Belsky *et al.* 1997). These publications describe a series of synergistic effects that can result when cattle over-graze or impact riparian areas. Over time, woody and hydric herbaceous vegetation along a stream can be reduced or eliminated and livestock trampling causes streambanks to collapse. Without vegetation to slow water velocities, hold the soil, and retain moisture, flooding causes more erosion of streambanks; the stream becomes wider and shallower and in some cases downcut; the water table drops; and hydric, deeply rooted herbaceous vegetation dies out and is replaced by upland species with shallower roots and less ability to bind the soil. The resulting instability in water volume, increased summer water temperature, loss of pools and habitat adjacent and connected to streambanks, and increased substrate fine sediment and cobble-embeddedness adversely affect MCR steelhead and their habitat. Specific effects on MCR steelhead habitat elements are described below.

Riparian Vegetation and Shade

In areas of historic season-long grazing, major vegetation changes can take place with changes in livestock use. Routinely grazing an area too late in the growing season can cause adverse changes in the plant community. Individual plants are eliminated by re-grazing them during the growing season and not allowing adequate recovery after grazing. Regardless of seral stage, at least 6 inches of residual stubble or regrowth is recommended to meet the requirements of plant vigor maintenance, bank protection, and sediment entrapment (Clary and Webster 1989). More than 6 inches of stubble height may be required for protection of critical fisheries or easily eroded streambanks and riparian ecosystem function (Clary and Webster 1989). In the Blue Mountains of Eastern Oregon, regrowth of herbaceous vegetation does not normally occur after July (Gillen *et al.* 1985). Consequently, livestock use of riparian vegetation in the summer and fall needs to be tightly controlled to ensure adequate stubble height to protect streambanks during high streamflows in winter and spring.

Over time, entire plant communities can change as a result of heavy or prolonged grazing pressure. In mountain riparian systems of the Pacific Northwest, Kentucky bluegrass has established itself as a dominant species in native bunch grass meadows as a result of overgrazing and subsequent habitat deterioration. Plants in the early seral stage community do not provide as much protection for the watershed and streambanks. Many forbs and annual plants that frequently dominate early seral plant communities do not have the strong, deep root systems of the later seral perennials such as bunch grasses, sedges, rushes, shrubs, and willows. Kauffman

et al. (1983) found that when grazing in moist meadows was halted, succession towards a more mesic/hydric plant community occurred.

Removal of riparian vegetation reduces habitat quality, resulting in negative impacts on fish production (Platts and Nelson 1989). Reductions in streambank cover related to overhanging vegetation, root vegetation, and undercut banks has been correlated with reduced fish production (EPA 1993). This is particularly evident in meadow systems, where herbaceous vegetation may provide the only shade to stream channels. Stream cover in hardwood-dominated riparian systems can also be damaged by livestock grazing. Shrubby vegetation, such as willows, may be an important source of shade along smaller streams and in mountainous areas (Henjum *et al*. 1994). Cattle often begin to browse woody species when herbaceous stubble heights fall below about 4 inches (Hall and Bryant 1995). Others suggest that 4 to 8 inches of herbaceous residual stubble height may be needed to protect hardwoods, especially during late season grazing (Clary and Leininger 2000).

In a study of late season grazing in the Blue Mountains of Eastern Oregon, Kauffmann *et al.* (1983) found that shrub use was generally light except on willow-dominated gravel bars. They conclude that on gravel bars, succession was retarded by livestock grazing. In a later study in the same area, Green and Kauffman (1995) found livestock disturbance and the ecosystem's response to grazing was highly variable among plant communities. In areas rested from grazing, abundance of undesirable non-native species decreased. They also found that in grazed areas, height, establishment, and reproduction of woody species on gravels bars was less than in ungrazed areas. These studies suggest that although livestock grazing may not have adverse effects on mature individuals of woody species such as willows, recolonization of disturbed areas such as gravel bars may be impeded by livestock grazing. Another study with similar results found that regeneration of willow, cottonwood, and aspen was inhibited by browsing on seedlings (Fleischner 1994).

In a study of watersheds in the JDR basin, Maloney *et al.* (1999) found that watersheds with less than 75% surface shade can exceed stream temperature standards for rainbow trout and Chinook salmon. Stream temperatures in all heavily grazed watersheds in this study exceeded standards for salmonids. The authors concluded that revegetation of the streamside area with shrubs or small trees would likely result in reduced stream temperatures and an improved environment for rainbow trout and Chinook salmon. They further suggest that using buffer strips and more stringent control of animal use of riparian areas would maintain the integrity of the riparian zone.

Li (1994) noted that solar radiation reaching the channel of an unshaded stream in the JDR basin was six times greater than that reaching an adjacent, well-shaded stream and that summer temperatures were 4.5 ^{o}C warmer in the unshaded tributary. Below the confluence of these two streams, reaches that were unshaded were significantly warmer than upstream and downstream shaded reaches. A separate comparison of water temperatures at two sites of similar elevation in watersheds of comparable size found temperature differences of 11^{o}C between shaded and unshaded streams (Li 1994). Warming of streams from loss of riparian vegetation is likely

widespread in eastern Oregon and may be particularly acute because of low summer flows and many cloud-free days

Livestock indirectly affect plant species composition in riparian zones by aiding the dispersion and establishment of nonnative species; seeds may be carried on the fur or in the dung of livestock (Fleischner 1994). The presence of nonnative species, especially invasive and highly competitive weed species such as knapweeds and thistles, can disrupt the natural functions of riparian areas.

Streambank Stability and Channel Morphology

Removal of streambank and riparian vegetation along with mechanical bank damage reduces the structural stability of the stream channel, with several resultant negative impacts on fish productivity (EPA 1993; Platts 1990). Several studies have shown that heavy livestock grazing pressure causes significant streambank damage (Kaufman *et al.* 1983; Clary and Kinney 2002). Studies in eastern Oregon and northern California implicate livestock as a major cause of channel downcutting (Dietrich *et al*. 1993). Other studies indicate that light or moderate grazing pressure did not result in significant streambank damage (Buckhouse *et al.* 1981).

Riparian areas over-grazed by cattle often have reduced salmonid living space caused by increased stream channel widening and increased width/depth ratios (Platts and Nelson 1989, EPA 1993). When riparian areas are over-grazed, adverse effects on streambank stability increase. As stubble height of herbaceous vegetation along streambanks decreases, livestock eating this vegetation must move more frequently to attain the same volume of feed. Increased movement typically results in trailing in riparian areas, which causes additional compaction and bank damage (Clary and Lenninger 2000).

Soils

Livestock grazing also influences vegetation by modifying soil characteristics. Hooves compact soils that are damp or porous, which inhibits the germination of seeds and reduces root growth (Heady and Child 1994). The degree of soil compaction depends on soil characteristics, including texture, structure, porosity, and moisture content (Platts 1991; Heady and Child 1994), and the movement of animals as directed by the permitee or rider. Generally, soils that are high in organic matter, porous, and composed of a wide range of particle sizes are more easily compacted than other soils. Similarly, moist soils are usually more susceptible to compaction than dry soils, although extremely wet soils may give way and then recover following compression by livestock (Clayton and Kennedy 1985).

Changes in soil infiltration capacity associated with compression due to livestock may lead to more rapid surface runoff, lowering moisture content of soil and the ability of plants to germinate or persist (Heady and Child 1994). However, sometimes livestock break up impervious surface soils, allowing for greater infiltration of water and helping to cover seeds (Savory 1988 *cited in* Heady and Child 1994).

Soils in arid and semi-arid lands have a unique microbiotic surface layer, or crust, of symbiotic mosses, algae, and lichens that covers soils between and among plants. This cryptogamic crust plays an important role in hydrology and nutrient cycling and is believed to provide favorable conditions for the germination of vascular plants (Fleischner 1994). Livestock hooves break up these fragile crusts, and reformation may take decades. Anderson *et al*. (1982) found recovery of cryptogamic crusts took up to 18 years in ungrazed enclosures in Utah. In arid and semi-arid climates, the cryptogamic crust has been shown to increase soil stability and water infiltration (Loope and Gifford 1972; Kleiner and Harper 1977; Rychert *et al*. 1978). Disruption of the cryptogamic crust may thus have long-lasting effects on erosional processes.

In areas of overgrazing, livestock can alter surface soils by removing ground cover and mulch and compacting soils, which in turn affects the response of soils to rainfall. Kinetic energy from falling raindrops erodes soil particles (splash erosion), which may then settle in the soil interstices and result in a less permeable surface. Livestock grazing can increase the percentage of exposed soil and break down organic litter, reducing its effectiveness in dissipating the energy of falling rain. However, livestock in open range conditions are not normally observed in concentrations sufficient to cause this type of effect.

Water Quality

When riparian vegetation is removed by grazing, sunlight reaching streams increases, leading to cumulative increases in downstream temperatures (Barton *et al.* 1985). This is especially true for high desert watersheds, such as the JDR basin, of the intermountain West (Platts and Nelson 1989). Alteration of stream temperature processes may also result from changes in channel morphology. As mentioned above, streams in areas that are improperly grazed are wider and shallower than in ungrazed systems, exposing a larger surface area to incoming solar radiation (Bottom *et al*. 1985; Platts 1991). Wide, shallow streams heat more rapidly than narrow, deep streams (Brown 1980). Similarly, wide, shallow streams may cool more rapidly, increasing the likelihood of anchor ice formation. Reducing stream depth may expose the stream bottom to direct sunlight, allowing greater heating of the substrate and subsequent conductive transfer to the water.

Bell (1986) reported the upper lethal temperature for steelhead to be 75° F, with a preferred temperature range between 50 and 55° F. The ability of rearing steelhead to tolerate temperature extremes depends to a certain degree on the fish's recent thermal history, however, research indicates that most salmonid species are at risk when temperatures exceed 73 to 77° F (Spence *et al.* 1996). In addition to the lethal effects of high temperatures, salmonids rearing at temperatures near the upper lethal limit have decreased growth rates because nearly all consumed food is used for metabolic maintenance (Bjornn and Reiser 1991). Temperatures exceeding the upper lethal limits may be tolerated for brief periods or fish may seek thermal refugia. Li *et al.* (1991) reported that resident rainbow trout in an eastern Oregon stream selected natural and artificially created cold water areas when temperature in the main stream channel exceeded 75.2° F but showed no preference for these areas when temperature in the main stream channel was less than 68° F. Coldwater refugia, such as springs and groundwater seeps, allow some steelhead to persist in areas where temperatures in mainstream channels

exceed their upper lethal limit. However, total steelhead production in streams will decrease if the amount of habitat suitable for the species use is restricted to areas of coldwater refugia.

Increases in stream temperature due to removal of streamside vegetation will also have a negative effect on dissolved oxygen (DO) concentrations. As temperatures increase, oxygen solubility in water decreases and DO levels decrease. Salmonids require approximately 6 milligrams per liter (mg/L) of DO to survive, and suffer no metabolic impairment when DO levels remain at a minimum of 8 mg/L (Davis 1975). Phillips and Campbell (1961) determined that DO levels must average more than 8 mg/L for embryos and alevins to have good survival rates. Silver *et al*. (1963) and Shumway *et al*. (1964) observed that salmonids reared in water with low or intermediate oxygen levels were smaller and had longer incubation periods than those raised at high DO levels. Low DO levels increased the incubation periods for anadromous species, and decreased the size of alevins (Garside 1966; Doudoroff and Warren 1965; Alderdice *et al*. 1958). Some studies have shown that salmonids may be able to withstand periods when DO levels are as low as 5 mg/L but growth, food conversion efficiency, and swimming performance will be adversely affected (Bjornn and Reiser 1991).

Because riparian areas are favored by cattle and sheep, nutrients eaten elsewhere on the range are often deposited in riparian zones (Heady and Child 1994). The deposition of nutrients in riparian areas increases the likelihood that elements such as nitrogen and phosphorous will enter the stream. Nutrients derived from livestock wastes may be more bioavailable than those bound in organic litter.

Prey Base

The coldwater communities such as aquatic invertebrates and other coldwater fish which rearing juvenile salmonids rely on for food require minimum DO levels of between 6 and 8 mg/L (ODEQ 1995). As temperatures increase and DO levels drop, these cold water communities shift from salmonids and less tolerant aquatic invertebrates such as mayflies and stoneflies to coolwater structure dominated by sculpins and more tolerant aquatic invertebrates such as chironomids. A study by Li *et al.* (1994), in the JDR basin, found that colder streams supported the highest standing crops of trout and had the most favorable trout to invertebrate standing crop ratios. This suggests that colder streams in this basin have a greater trophic efficiency leading to salmonid production.

Reduction in riparian canopy increases solar radiation and temperature, and thus stimulates production of periphyton (Lyford and Gregory 1975). In a study of high desert streams, Tait *et al.* (1994) found that prey less palatable for trout dominated the food base in warmwater stream reaches exposed to sunlight. In this study, Tait *et al*. (1994) reported that thick growths of filamentous algae encrusted with epiphytic diatoms were found in reaches with high incident solar radiation, whereas low amounts of epilithic diatoms and blue-green algae dominated in shaded reaches. Periphyton biomass was significantly correlated with incident solar radiation. While densities of macroinvertebrates in forested streams typically increase in response to increased periphyton production, the effect of stimulated algal growth in rangeland streams is less clear. Tait *et al*. (1994) found that biomass, but not density, of macroinvertebrates was

greater in reaches with greater periphyton biomass. The higher biomass was a consequence of many *Dicosmoecus* larvae, a large-cased caddisfly, that can exploit filamentous algae. Consequently, any potential benefits of increased invertebrate biomass to organisms at higher trophic levels, including salmonids, may be small, because these larvae are well protected from fish predation by their cases. Tait *et al*. (1994) suggest that these organisms may act as a trophic shunt that prevents energy from being transferred to higher trophic levels.

Fine sediment resulting from livestock trampling banks can reduce benthic invertebrate abundance. Studies have shown that sediment inputs resulting in substrate embeddedness of greater than one-third can result in a decrease in benthic invertebrate abundance and thus a decrease in food available for juvenile salmonids (Waters 1995).

Reducing riparian vegetation can reduce habitat for terrestrial insects, an important food for juvenile salmonids (Platts 1991). Riparian vegetation also directly provides organic material to the stream, which makes up about 50% of the stream's nutrient energy supply for the food chain (Cummins 1974 *cited in* Platts 1991). This allochthonous material provides an important food source for aquatic insects that, in turn, become prey for salmonids. Consequently, removal of riparian vegetation can affect the diet of fish by reducing production of both terrestrial and aquatic insects (Chapman and Demory 1963).

Substrate and Sediment

Damage to streams in the western United States from livestock grazing is largely due to the generation of excess sediment caused by overuse of riparian areas (Waters 1995). Cattle or sheep trampling streambanks and subsequent erosion adds fine sediments to stream substrates. Mass wasting of sediment occurs along streambanks where livestock walk on overhanging cut banks (Behnke and Zarn 1976; Platts and Raleigh 1984; Fleischner 1994). At great risk are salmonid spawning reaches used by anadromous Pacific salmonids and inland trout (Waters 1995). Increases in fine sediment lead to greater substrate embeddedness and a decrease in interstial spaces in gravel substrate important for steelhead spawning. Increases in substrate embeddedness impair food production as described above and block refugia for young salmonids (Rinne 1990). These circumstances reduce the quality of spawning and rearing habitat available. Salmonid survival at early life stages has been directly linked to the amount of surface fines in stream substrates (EPA 1993). Juvenile salmonids depend on clean substrate for cover, especially for over-winter survival (EPA 1993). Successful salmonid spawning requires clean gravels with low fine sediment content (Spence *et al.* 1996).

Peak/ Base Streamflow

Channel downcutting caused by riparian degradation can lower local water tables and reduce the volume of base flow available in dry seasons and periods of drought (EPA 1993). Riparian vegetation has been linked to the water-holding capacity of streamside aquifers (Platts 1990). As riparian vegetation is removed by livestock grazing and streamside soils are compacted by livestock hooves, the ability of areas to retain water is decreased. Johnson (1992) reviewed studies related to grazing and hydrologic processes and concluded that heavy grazing nearly always decreases infiltration, reduces vegetative biomass, and increases bare soil. Decreased

evapotranspiration and infiltration increase and hasten surface runoff, resulting in a more rapid hydrologic response of streams to rainfall. When this occurs, high flows in the spring tend to increase in volume, leading to bank damage and erosion. Summer and fall base flows are decreased, often resulting in flows that are insufficient to provide suitable rearing habitat for juvenile salmonids. If aquifers lose their capacity to hold and slowly deliver water to the stream, differences between peak and base discharge rates increases dramatically (EPA 1993). Some streams that typically flowed perennially may experience periods of no flow in the summer or fall. Li *et al*. (1994) found that streamflow in a heavily grazed eastern Oregon stream became intermittent during the summer, while a nearby, well-vegetated reference stream in a similar-sized watershed had permanent flows. They suggested that the difference in flow regimes was due to diminished interaction between the stream and floodplain, with resultant lowering of the water table.

In most riparian areas of the allotments addressed in this Opinion livestock use is not sufficient to cause significant reduction in infiltration rates or change in streamflow regime. Experiments in northeastern Colorado showed reductions in infiltration in heavily grazed plots, but no differences between moderately and lightly grazed plots (Rauzi and Smith 1973). There are, however, large meadow systems where livestock tend to congregate such as stringer meadow systems in the Murderer's Creek allotment where grazing must be tightly controlled to prevent these effects.

Pool Quality/Quantity

Instream pools are important habitat for both juvenile and adult salmonids. Fish abundance is related to the diversity of habitats and number and quality of instream pools (EPA 1993). Rearing juvenile salmonids use slow water habitat found in pools, while adult salmonids make use of cover and deep water found in pools during spawning migrations. Pools with undercut banks are important rearing areas for juvenile salmonids (Bjornn and Reiser 1991). These areas provide overhead cover and water velocities ideal for both juvenile and migrating adult salmonids. Bank trampling by livestock can destroy undercut banks, thus reducing hiding cover for fish. Introduction of fine sediments to streams can fill in pools, reducing depth and covering coarse substrates. Reduction in growth of woody species such as aspen and cottonwoods along the stream's edge can reduce in instream wood, thereby diminishing the retention of spawning gravels and decreasing the frequency of pool habitats

2.1.5.3 Minimizing Effects from LAA Livestock Grazing

Since the implementation of PACFISH in 1995, many riparian areas in the JDR basin are now managed to protect and enhance their condition. In an effort to avoid the above-mentioned adverse effects of improper livestock grazing, the BLM has made many adjustments to their range program. Many riparian areas are now fenced to exclude cattle. This is one of the most effective techniques to speed recovery and protect riparian areas from damage from livestock grazing. According to the BA and BLM fishery biologist, the majority of perennial streams on BLM-administered livestock grazing allotments are showing improving trends in grass, shrub

growth, vigor and streambank stability. These trends are noted through general observation and documented by photographs and riparian survey data.

Permitees rely on salting, herding, and upland water sources to keep cattle away from unfenced riparian areas. Some information is available on the effectiveness of these techniques, however, results are conflicting. Erhart and Hansen (1997) cited three studies done in Oregon on the effectiveness of upland water sources and mineral supplements in reducing use of stream areas by cattle. In two studies, these techniques reduced use of stream areas while another study demonstrated that these techniques did not significantly alter cattle distribution in riparian areas. Riding and herding livestock away from riparian areas is a commonly used technique on BLM allotments. Observations during site visits to adjacent FS land suggest that this technique works better on some allotments than others.

Placing salt or mineral supplements in upland areas is often used to decrease the amount of time livestock spend in riparian areas. McInnis and McIver (2001) found that off-stream water and salt attracted cows to the uplands enough to significantly reduce the damage to streambanks from 9% in non-supplemented pastures to 3% in supplemented pastures. Ehrhart and Hansen (1997) provide anecdotal evidence that salt, when used in conjunction with alternate water sources, can help distribute livestock over open range, however, they stress that the mineral supplements must be placed more than 1/4 mile from streams. In contrast, Bryant (1982) and Martin and Ward (1973) found that salt placement away from riparian areas did not significantly alter the amount of time livestock spent in riparian zones. Both studies conclude that use of mineral supplements alone will not influence livestock distribution appreciably.

Fencing of sensitive riparian areas is an effective way of protecting riparian resources, fish habitat and fish populations. Platts (1991) found that in 20 of 21 studies, where stream and riparian habitats were degraded by livestock grazing, habitats improved when grazing was prohibited in the riparian zone. Storch (1979) reported that passing through grazed areas in a reach of Camp Creek, Oregon, trout made up 77% of the fish population in a fenced exclosure, but only 24% of the population outside the exclosure. The existing fencing on some BLM allotments, as well as newly-proposed fencing, will protect some sensitive riparian areas from livestock grazing during the grazing season.

Establishing utilization standards for residual stubble height, shrub use, and bank damage, then moving livestock when these standards are approached or reached will help eliminate many of the adverse effects improper livestock grazing can have on fish and their habitat. Permittees are expected to meet these utilization standards each grazing season, and the BLM relies on a monitoring plan to ensure compliance. Leaving 4 to 6 inches of residual stubble height will help protect streambanks from erosion during subsequent high flow events, and minimize livestock use of riparian shrubs that provide shade to streams. Limiting bank damage to less than 10% should prevent adverse changes to stream channel morphology and width/depth ratios. Some pasture or unit rotations have been altered to minimize or eliminate the potential for livestock to interfere with MCR steelhead spawning. Delaying livestock turnout until soils are relatively dry minimizes damage to streambanks and riparian soils .

However, the best information available does not allow NOAA Fisheries to determine if the current BLM utilization standards are adequate to allow for attainment of RMOs identified in PACFISH (USDA, USDI 1995). Setting proper utilization guidelines requires trial and error, with focused monitoring, analysis, and evaluation of the results after adjusting management (Leonard *et al.* 1997). Research on livestock grazing in riparian areas indicates that utilization standards are a good beginning, but monitoring is necessary to validate that riparian objectives are being met under current standards. The BLM is gathering this information, and several more years of effectiveness monitoring results will indicate whether the current standards are sufficient to meet RMOs.

Compliance or implementation monitoring is essential to the success of any grazing program (Leonard *et al.* 1997). According to the BA, the BLM will adaptively manage allotments, changing livestock numbers, season of use, or rotation patterns if riparian utilization standards are not met. The BLM will rely largely on the IIT implementation monitoring program to direct monitoring efforts in the UJDR, NFJDR, and MFJDR subbasins. Monitoring for and responding to instances of unauthorized use of livestock is also important. Leonard *et al.* (1997) point out that only a few weeks of unauthorized use or overgrazing can eliminate years of progress in improving riparian systems. Total rest from grazing can be one of the best alternatives for realizing rapid recovery of riparian areas (Leonard *et al*. 1997).

Many authors have concluded that efforts of operators (permittees) and managers (in this case, the BLM) are more important than any particular system or approach to meeting objectives for livestock grazing in riparian areas (Ehrhart and Hansen 1997). NOAA Fisheries believes that consistent and accurate monitoring of the BLM range program activities is essential to minimizing and avoiding adverse effects on MCR steelhead and meeting the requirements of PACFISH (USDA and USDI 1995).

2.1.5.4 Monitoring and Establishing Utilization Standards

The BLM performs monitoring on individual allotments including utilization and actual use, trend studies, photopoints, temperature, and hydrologic information. Much of this is done on a rotation among all allotments on the district because the district size is not conducive to 100% monitoring. Within the resource management plans for the area, each allotment was rated for fish and wildlife values, percentage of public land, and accessibility to categorize the allotments based on potential resource value. Those allotments categorized as higher priority receive more monitoring attention in any given year than those of lesser priority. Allotments associated with anadromous fish values are monitored most frequently. All allotments determined by the BLM to be LAA MCR steelhead will be monitored. Between 1999 and 2003, the BLM has monitored the following allotments in the UJDR subbasin: Clark, Squaw Creek, Middle Fork, Dixie, Murderer's Creek, Neal Butte, North Fork, Johnny Cake Mountain, Pointer, Big Baldy, Cottonwood Creek, Indian Creek, Rockpile, Little Wall Creek, Cottonwood Creek, Umatilla, Kinzua, Rudio Creek, and Creek.

On April 14, 2000, a FS/BLM memorandum transmitted the "Interagency Implementation Team (IIT) 2000 Grazing Implementation Monitoring Module" to the Prineville District BLM and other National Forests and BLM districts in Oregon. The BLM has conducted implementation monitoring, as directed in the module, on BLM-administered allotments in the NFJDR, MFJDR, and UJDR subbasins. The IIT grazing module was altered in 2002 and 2003. The altered module provided further clarification on where monitoring should occur and how many units should be sampled each year.

The CORA is within the area covered by PACFISH (USDA and USDI 1994). All agency activities in this area are required to be consistent with their land use plans (LUP) as modified by PACFISH. Because the broad scale consultation for MCR steelhead on the BLM's LUP is incomplete, grazing activities must be consistent with the requirements of NOAA Fisheries' June 22, 1998, Opinion, "Section 7 Consultation on the Effects of Continued Implementation of Land and Resource Management Plans on Endangered Species Act Listed Salmon and Steelhead in the Upper Columbia and Snake River Basins" (NOAA Fisheries No.: 1999/00645) (NOAA Fisheries 1998).

Land management agencies such as the FS and BLM establish utilization standards for livestock grazing in riparian areas. These standards provide "move triggers" for permitees as well as means to gauge the effects of grazing on RMOs. Typically, herbaceous residual stubble height is used as a standard to measure utilization of riparian forage. Shrub utilization and bank damage estimates are also used as a utilization standards. Permittees are instructed by land management agencies to move livestock when thresholds for utilization standards are approached or reached. Typically, stubble height utilization standards are set between 4 and 6 inches of residual stubble height. As grazing in riparian areas begins to result in 4 to 6 inches of remaining herbaceous stubble height, livestock are moved to another unit or pasture. Sometimes stubble height measurements are taken on the most palatable species such as Kentucky blue grass. Other times, hydric vegetation such as sedges and rushes growing along the streambank are measured.

The BLM uses the IIT protocol to measure stubble height of hydric vegetation present in the "greenline" directly beside the stream's edge. Hall and Bryant (1995) state that as stubble height of the most palatable species reaches 3 inches, unacceptable grazing use in riparian areas may begin. Hall and Bryant's method relies on measuring stubble height of the most palatable species, while the "move trigger monitoring" and the IIT protocol used by the land management agencies relies on stubble height measurements of hydric vegetation such as sedges and rushes. These plants are typically less palatable to livestock. Therefore, applying Hall and Bryant's 3-inch standard to stubble height of hydric vegetation is not appropriate. Normally, when hydric vegetation is measured, standards are set at between 4 and 6 inches.

Land management agencies formulate residual stubble height standards for units or pastures within a grazing allotment based on two primary factors. The first is the hydrologic function of the vegetation. Herbaceous vegetation is important in maintaining and building streambanks. Stems of herbaceous vegetation slow stream current velocity during high flow events and facilitate sediment deposition, a process essential to the building of streambanks. Roots of

herbaceous vegetation stabilize the soil and prevent erosion during high flow events. Clary *et al.* (1996) found that in a simulated channel, residual stubble heights of 0.5 to 6 inches of flexible vegetation supported streambank rebuilding within a single sediment loading and flushing. They also found that under multiple loading and flushing events, 8 to 12 inches of residual stubble height entrapped and stabilized significant amounts of sediment.

The second factor is the contribution the residual vegetation makes to healthy riparian habitat. Herbaceous vegetation provides many important functions in a healthy riparian ecosystem. Overhanging grasses, sedges, and rushes provide shade to the stream and hiding cover for fish. In meadow systems, herbaceous vegetation may be the only shade-providing plants. Overhanging herbaceous vegetation can provide valuable overwintering habitat for juvenile salmonids. The presence of a healthy community of hydric vegetation in headwater wetland areas of watersheds plays an important role in maintaining stream flow. The roots of this vegetation wick moisture into the soil during wet periods in the spring, maintaining a high water table. This water is then released gradually throughout the summer and fall, maintaining adequate stream flow during critical periods for juvenile salmonid growth and survival.

In grazed riparian systems, the presence of herbaceous vegetation prevents livestock from browsing hardwood shrubs. Clary and Leininger (2000) provide guidelines for establishing stubble height standards to avoid livestock browsing on hardwood shrubs, but point out that residual stubble heights necessary to avoid browsing on shrubs depend on many factors and can vary between 4 and 8 inches.

Considering these two factors, land management agencies establish residual stubble height utilization standards for each unit or pasture. As previously mentioned, the standard is typically 4 to 6 inches of residual stubble height. Clary and Leininger (2000) suggest starting with approximately a 4 inch stubble height standard and then monitoring the area to determine if a change needs to be made to improve riparian conditions. They also state that in certain areas, approximately 6 to 8 inches of residual stubble height may be needed to protect streambanks sensitive to trampling or protect riparian shrubs from browsing. For the allotments addressed in this Opinion, residual stubble height standards have been set by the BLM at 4 to 6 inches.

2.1.5.5 Summary of Effects

Livestock grazing in riparian areas, if not carefully controlled or managed, can have numerous and, in some cases, severe adverse effects on fish and their habitat. Techniques such as salting, herding, riding, fencing, and development of off-site water incorporated into the proposed grazing plans by the BLM will help to minimize these potential adverse effects. In addition, allotment-specific measures such as reducing stocking rates, constructing new fences, and shortening season of use will lessen the impacts of grazing on riparian areas in the NFJDR, MFJDR and UJDR. However, it is reasonably certain that some localized degradation of MCR steelhead habitat indicators will occur on all of the LAA allotments. NOAA Fisheries believes that the proposed conservation measures for the BLM grazing program are sufficient to keep this degradation to a minimum. When assessed at a watershed scale, improvement of habitat

indicators is expected. NOAA Fisheries expects that the BLM will continue to identify areas where riparian habitat is being impacted and adjust grazing practices accordingly. Take will be limited to the streams that contain MCR steelhead within the allotments identified in this Opinion.

2.1.6 Cumulative Effects

"Cumulative effects" are defined in 50 CFR 402.02 as those effects of "future state or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The "action area" for this consultation is identified in section 2.1.4 of this Opinion.

The BLM identified no specific private or state actions that are reasonably certain to occur in the future that would affect MCR steelhead or their habitat within the action area. Significant improvement in MCR steelhead reproductive success outside of Federally-administered land is unlikely unless changes in grazing, agricultural, and other practices occur within these non-federal riparian areas in the JDR basin. NOAA Fisheries is not aware of any specific future actions which are reasonably certain to occur on non-federal lands. Until improvements in non-federal land management practices are actually implemented, NOAA Fisheries assumes that future private and state actions will continue at similar intensities as in recent years.

2.1.7 Conclusion

NOAA Fisheries has determined that, when the effects of the subject actions addressed in this Opinion are added to the environmental baseline and cumulative effects occurring in the action area, they are not likely to jeopardize the continued existence of MCR steelhead. These conclusions were reached primarily because: (1) Most relevant aquatic habitat indicators on the BLM-administered livestock grazing allotments addressed in this Opinion along the mainstem JDR and tributaries, the SFJDR and tributaries, and the MFJDR and tributaries are expected to be maintained under current grazing regimes and monitoring strategies, and relevant aquatic habitat indicators are improving in some pastures or units; (2) the BLM indicates that implementation of current grazing season restrictions have resulted in improvement in riparian vegetation conditions on many allotments; (3) for those areas of allotments where the attainment of RMOs has been prevented by the recent grazing practices, the BLM has adjusted grazing practices or developed plans to prevent this in the future. By reducing season of use, reducing livestock numbers and fencing more riparian areas; (4) although available data shows that some trampling of MCR steelhead redds may occur, and the percentage of redds potentially trampled can be high in certain channel types (meadow areas, C-type stream channels), improvements in livestock management on BLM-administered livestock grazing allotments containing or beside MCR steelhead spawning areas are expected to minimize redd trampling by livestock; and (5) because of improvements in riparian vegetation, stream shading, and streambank stability in many areas, and additional conservation measures developed for the BLM grazing program, aquatic habitat indicators such as water temperature, sediment, substrate embeddedness,

width/depth ratio, and streambank condition are expected to be improved and restored over the long term on JDR tributary streams.

2.1.8 Conservation Recommendations

Section 7 (a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species or to develop additional information. NOAA Fisheries believes that the following conservation recommendations regarding livestock grazing should be implemented:

1. Review the range improvement budget annually, and give top priority to restoring riparian areas along streams containing MCR steelhead habitat by development of off-channel water sources and cattle exclusion devices.

2. Review all allotments for opportunities to allow for rest of high-priority pastures. Using the results, reduce grazing impacts by making allotment management changes, such as more efficient grazing systems, restructured pasture boundaries, and increased numbers of pastures within an allotment.

Please notify NOAA Fisheries if the BLM carries out any of these recommendations so that we will be kept informed of actions that minimize or avoid adverse effects, and those that benefit species or their habitats.

2.1.9 Reinitiation of Consultation

Reinitiation of consultation is required if: (1) The action is modified in a way that causes an effect on the listed species that was not previously considered in the BA or this Opinion; (2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; (3) a new species is listed or critical habitat is designated that may be affected by the action; or (4) the amount or extent of take specified in the Incidental Take Statement is exceeded (50 CFR. 402.16). To reinitiate consultation, the BLM must contact the NOAA Fisheries Oregon State Habitat Office, and refer to NOAA Fisheries No.: **2004/00383**. This consultation covers the described activities only through the end of calendar year 2008.

2.2 Incidental Take Statement

The ESA at section 9 [16 USC 1538] prohibits take of endangered species. The prohibition of take is extended to threatened anadromous salmonids by section 4(d) rule [50 CFR 223.203]. Take is defined by the statute as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." [16 USC 1532(19)] Harm is defined by regulation as "an act which actually kills or injures fish or wildlife. Such an act may include

significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavior patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering." [50 CFR 222.102] Harass is defined as "an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." [50 CFR 17.3] Incidental take is defined as "takings that result from, but are not the purpose of, carrying out an otherwise lawful activity conducted by the Federal agency or applicant." [50 CFR 402.02] The ESA at section 7(o)(2) removes the prohibition from any incidental taking that is in compliance with the terms and conditions specified in a section 7(b)(4) incidental take statement [16 USC 1536]. The exemption from the take prohibitions is limited to the actions described and analyzed in this Opinion for the 2004 through 2008 grazing seasons.

2.2.1 Amount or Extent of Take

NOAA Fisheries expects incidental take to occur as a result of proposed action actions that will harm, injure or kill MCR steelhead. Some level of incidental take is expected to result from livestock grazing due to cattle trampling of MCR steelhead redds, disturbance of spawning adult MCR steelhead, or frightening of juvenile MCR steelhead from cover by livestock wading in streams. There is a lack of data that would allow NOAA Fisheries to accurately predict the probability of redd tramplings within any allotment. Because of measures included in the proposed action, and terms and conditions in section 2.2.3 of this Opinion, redd trampling should be rare. Since spawning adult MCR steelhead provide the gametes that will become the progeny to maintain MCR steelhead in the JDR, and measures to minimize trampling will be followed, no more than two redds should be trampled in any grazing season for all of the BLM-administered land covered by this Opinion.

Additionally, some localized riparian habitat disturbance is also reasonably certain to occur in the allotments addressed in this Opinion. Take of MCR steelhead could result from increased stream temperatures, decreased dissolved oxygen levels, or smothering of eggs by fine sediments as a result of riparian disturbance caused by livestock grazing. Although NOAA Fisheries expects the habitat-related effects of these actions to cause some level incidental take within the action area, this take cannot be accurately quantified as a number of fish taken. In such circumstances, NOAA Fisheries provides a habitat surrogate to quantify the extent of incidental take. The BLM has indicated that the maximum disturbance resulting from the action will be 10% bank alteration, 10% woody browse utilization, and removal of riparian vegetation to a level minimum of 4 inches of residual stubble height. The disturbance will be limited to the following linear measurements of MCR steelhead in the allotments listed:

- 2.1 miles in Squaw Creek Allotment
- 1.6 miles in Johnson Creek Allotment
- 4.6 miles in Dixie Allotment
- 5.9 miles in Murderer's Creek Allotment
- 5.75 miles in North Fork Allotment

- 0.9 miles in Franks Creek Allotment
- 1.2 miles in Johnny Cake Mountain Allotment
- 4.4 miles in Big Baldy Allotment
- 0.6 miles in the Pointer Allotment
- 0.8 miles in the Cottonwood Creek Allotment
- 7.6 miles in the Rockpile Allotment
- 0.7 miles in the Little Wall Creek Allotment
- 0.4 miles in the Canyon Mountain Allotment
- 3.1 miles in the Two County Allotment
- 2.7 miles in the Kinzua Allotment
- 0.7 miles in the Creek Allotment

2.2.2 Reasonable and Prudent Measures

NOAA Fisheries believes the following reasonable and prudent measures are necessary and appropriate to minimize the likelihood of take of MCR steelhead resulting from the actions covered in this Opinion. The BLM shall:

1. Minimize the likelihood of incidental take resulting from livestock grazing and associated activities by managing livestock grazing allotments such that direct effects of livestock on spawning adult MCR steelhead, steelhead eggs, and pre-emergent fry in streams on or beside those allotments are avoided or minimized.

2. Minimize the likelihood of incidental take resulting from livestock grazing and associated activities by managing livestock grazing allotments such that direct and indirect effects of livestock on important components of MCR steelhead habitat are avoided or minimized.

3. Complete a comprehensive monitoring and reporting program to ensure implementation of conservation measures found in this Opinion.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the BLM must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To implement reasonable and prudent measure #1 (direct effects on MCR steelhead), the BLM shall:

    a. Conduct spawning surveys or gather information for allotments withing the range of MCR steelhead if cattle have access to streams prior to July 15.
        i. If cattle have access to areas where redds are present, protect redds by excluding cattle to minimize the possibility of trampling.

ii. Monitor protected redds to determine if trampling occurs.
iii. Report any trampling incidence to NOAA Fisheries staff and Law Enforcement within 24 hours of finding a trampled redd.

b. Continue surveying areas on allotments where MCR steelhead spawning may occur but has not been verified.

c. Notify NOAA Fisheries within 24 hours of any instances of unauthorized use on allotments covered by this Opinion or there are concerns for MCR steelhead.

d. When unauthorized livestock use[4] or excess use[5] occurs within stream reaches identified as MCR steelhead spawning habitat before July 15, the permittee will be notified to remove the livestock immediately. NOAA Fisheries' Oregon State Habitat Office shall be notified within 24 hours. Livestock shall be removed promptly after NOAA Fisheries is notified. If take of MCR steelhead has occurred, NOAA Fisheries Law Enforcement shall also be notified by the BLM within 24 hours of discovery.

e. Maintain and ensure proper operation of all exclosure structures, such as fences, designed to protect MCR steelhead spawning and rearing.

2. To implement reasonable and prudent measure #2 (effects on MCR steelhead habitat), the BLM shall:

a. Consistently implement grazing-related standards and guidelines listed in PACFISH to achieve RMOs regarding bank stability, water temperature, large woody material, lower bank angle, width/depth ratio and other aquatic habitat parameters which may be affected by livestock grazing.

b. If current utilization standards are insufficient to prevent unwanted browse of shrubs or keep bank alteration below 10%, change the utilization standard for that unit to facilitate meeting allotment objectives.

c. Follow the most recent direction for implementing monitoring for PACFISH related to grazing on land in the Prineville District BLM. For 2004, guidance provided in the June 2, 2004, instructional memorandum (Instructional Memorandum No. OR-2004-080).

d. Work with the Level 1 Team to develop implementation and effectiveness monitoring requirements for specific pasture units if needed.

e. Ensure that all permittees and range riders receive the training necessary to monitor livestock use and pasture move "triggers" (stubble height, woody utilization, and bank damage), and to clearly understand objectives stated in the BA.

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[4] Unauthorized use is any incident whereby livestock owned by a non-permittee enter onto the National Forest System lands.

[5] Excess use is any incident whereby livestock owned by a permittee holding a grazing permit are found in areas or at times other than shown on the grazing permit or otherwise authorized under a bill for collection.

3. To implement reasonable and prudent measure #3 (monitoring), the BLM shall:

a. Provide an end-of-year report to NOAA Fisheries by December 1 of each year. The BLM shall follow the End-of-Year Report Template agreed on by the Level 1 Team. The following shall be included in the report for each allotment: (1) Overview of proposed action and actual management (livestock numbers, on-off dates for each pasture, and strategy); (2) specific BLM implementation monitoring data, date, and location collected (stubble height, woody use, bank damage, unauthorized use, and fence maintenance); (3) specific permittee monitoring data; (4) review of management and compliance successes and failures and any transmittals/letters/actions addressed to/from permittees; (5) new habitat trend or MCR steelhead population data; (6) compliance with each pertinent term and condition contained in this Opinion; and (7) management recommendations for subsequent years.

b. Work with the Level 1 Team to review ongoing grazing activities and monitoring protocols to assess compliance with the requirements of this Opinion and the conservation measures identified in the BA through site visits as appropriate.

c. Work with the Level 1 Team when requested to provide information, which may include information such as allotment maps and spawning survey data, to be used by NOAA Fisheries Oregon State Habitat Office personnel during site visits to assess impacts of the current year's grazing activities on MCR steelhead. Site visits may occur at any time during the grazing season.

d. Send the completed report to:

National Marine Fisheries Service
Oregon Habitat Branch, La Grande Field Office
Attn: **2004/00383** or **2004/00659**
Attn: Brett Farman
3502 Highway 30
La Grande, Oregon 97850

e. NOTICE. If a dead, injured, or sick endangered or threatened species specimen is found, initial notification must be made to the National Marine Fisheries Service Law Enforcement Office, at Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; phone: 360.418.4246. Care should be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. Besides the care of sick or injured endangered and threatened species, or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence with the specimen is not unnecessarily disturbed.

3. MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT

3.1 Background

The MSA, as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-297), requires the inclusion of EFH descriptions in Federal fishery management plans. In addition, the MSA requires Federal agencies to consult with NOAA Fisheries on activities that may adversely affect EFH.

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA section 3). For the purpose of interpreting the definition of essential fish habitat: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish, and may include aquatic areas historically used by fish where appropriate. "Substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities. "Necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem, and "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.110).

Section 305(b) of the MSA (16 U.S.C. 1855(b)) requires that:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NOAA Fisheries shall provide conservation recommendations for any Federal or state activity that may adversely affect EFH;

- Federal agencies shall within 30 days after receiving conservation recommendations from NOAA Fisheries provide a detailed response in writing to NOAA Fisheries regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NOAA Fisheries, the Federal agency shall explain its reasons for not following the recommendations.

The MSA requires consultation for all actions that may adversely affect EFH, and does not distinguish between actions within EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and up slope activities, that may have an adverse effect on EFH. Therefore, EFH consultation with NOAA Fisheries is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

3.2 Identification of EFH

The Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. The PFMC has designated EFH for three species of Pacific salmon: Chinook salmon (*O. tshawytscha*); coho (*O. kisutch*); and Puget Sound pink salmon (*O. gorbuscha*)(PFMC 1999). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream from certain impassable man-made barriers (as identified by the PFMC), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years). In estuaries and marine areas, designated salmon EFH extends from the near shore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border. Detailed descriptions and identifications of EFH for salmon are found in Appendix A to Amendment 14 to the *Pacific Coast Salmon Plan* (PFMC 1999). Assessment of potential adverse effects on these species' EFH from the proposed action is based on this information.

3.3 Proposed Actions

The proposed action is detailed above in section 1.2 of this document. The action area is identified in section 2.1.4 of the biological opinion portion of this document. These areas within the UJDR, NFJD, and MFJDR subbasins have been designated as EFH for various life stages of Chinook salmon.

3.4 Effects of Proposed Action

As described in detail in the ESA portion of this consultation**,** the proposed activities may result in detrimental short-term adverse effects on a variety of habitat parameters.

3.5 Conclusion

NOAA Fisheries believes that the proposed action may adversely affect the EFH for Chinook salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions that may adversely affect EFH. NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the BLM, and believes that these measures are sufficient to minimize, to the maximum extent practicable, riparian disturbance and increased sedimentation.. In addition, Terms and Conditions outlined in section 2.2.4 are generally applicable to designated EFH for Chinook salmon, and do address these adverse effects.

1. To minimize riparian disturbance from grazing implementation, NOAA Fisheries recommends the following be implemented as conservation recommendations:
    - Conduct spawning surveys in allotments that have potential Chinook salmon spawning.
    - Consistently implement grazing-related standards and guidelines listed in PACFISH to achieve RMOs regarding bank stability, water temperature, large woody material, lower bank angle, width/depth ratio and other aquatic habitat parameters which may be affected by livestock grazing.
    - If a utilization standard of 4 inches of residual stubble height is not sufficient to prevent unwanted browse of shrubs, increase the utilization standard for that unit to 6 inches or more of residual stubble height.
    - Meet all requirements and fully implement the 2000 Grazing Implementation Monitoring Module, 2002 amendments to the module, and the pilot Effectiveness Monitoring Module.
    - Meet implementation and effectiveness monitoring requirements developed by the Level I Team for specific pasture units.
    - Provide the necessary training for all permittees and range riders to monitor livestock use and pasture move "triggers" (stubble height, woody utilization, and bank damage), and to clearly understand objectives stated in the BA.
    - Maintain and ensure proper operation of all exclosure structures, such as fences, designed to protect MCR steelhead spawning and rearing.

3.7 Statutory Response Requirement

Please note that the MSA (section 305(b)) and 50 CFR 600.920(j) requires the Federal agency to provide a written response to NOAA Fisheries after receiving EFH conservation recommendations within 30 days of its receipt of this letter. This response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the adverse impacts of the activity on EFH. If the response is inconsistent with a conservation recommendation from NOAA Fisheries, the agency must explain its reasons for not following the recommendation.

3.8 Supplemental Consultation

The BLM must reinitiate EFH consultation with NOAA Fisheries if the action is substantially revised or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920).

4. LITERATURE CITED

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this Opinion in addition to the BA and additional information requested by NOAA Fisheries and provided by the UNF, WWNF, and MNF.

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